OP2228 USER MANUAL

FOR

MACHINE MANUFACTURERS

OP2228 生产厂商使用手册

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INJECTION MOULDING MACHINE CONTROL SYSTEM BY OP2228

OP2228 is a man machine interface to use with controller CC3500 or CC4000

POINTS TO COMPARE	OP2228+CC3500 with PD3300	OP2228+CC4000
Digital inputs	24 inputs	32 inputs
Digital outputs	32 outputs	Basic 32 Expandable up to 48
Analog inputs	5 inputs	Basic 4, 4 more can be added and configured due to analog signal
Thermocouple inputs	8 inputs	Basic 8 expendable up to 16
Analog output	3 outputs	Basic 4 outputs, expendable up to 8 and additional 4 can be configured
PWM output	None, it need external proportional valve driver PD3300	4 channel pwm driver build in controller
Power supply	Need at least 5Amp,24VDC standard SMPS, Operator Interface and controller can operate stand alone	Need at least 5Amp,24VDC standard SMPS, Operator Interface and controller can run stand alone
Electronic GND	Semi isolated	100% isolated from outside and analog inputs and analog outputs
Short circuit protection	None	All digital outputs and pwm outputs has overload protection, if current exceed 3A,output shut off automatically
Proper for	Small and medium size machine	Medium and big size machine, especially equipped with complicated closed loop hydraulic

Points to underline;

- ✓ Independent memory locations in Operator Interface and Controller to initialize system with cross check
- ✓ Controller goes on running without Operator Interface after initializing upon power on
- ✓ System need standard power supply which easy to find in the market everywhere
- ✓ 3 levels password to do soft lock on keyboard
- ✓ Automatic wrong set value detection
- ✓ Real machine simulation with the ratio of set position
- ✓ Manuel keys with LED indicator to simplify checking out real time motions
- ✓ Standard RS232 communication between Operator interface and Controller
- ✓ Huge selection facilities in Machine Parameter Pages to simplify retrofitting applications
- ✓ Soft ramp adjustment for beginning and ending of each motion

- ✓ Soft position transducer span and offset adjustment
- ✓ Soft pressure transducer adjustment to measure injection or system pressure
- ✓ Adjustment page to make easy start up and check the reason of problems on machine
- ✓ Ejector and Carriage can operate with position transducer or switch or timer
- ✓ Effective mould protection
- ✓ Ejector can react on the way of clamp opening
- ✓ Programmable core configurations inclusive of operating on the way back of clamp
- ✓ Run cores manual without restriction
- ✓ Extrusion before injection to fill cavity in mould
- ✓ Programmable air ejector
- ✓ Programmable phonamatic or hydraulic actuated automatic door
- ✓ Programmable hydraulic accumulator
- ✓ Programmable input contact selection
- ✓ Controller diagnosis
- ✓ Real time alarm record

1.Description of keys

1.1 Programming key

F1,F2,F3,F4,F5 is used for entering parameter page. When any paremeter is wrong, question mark appear on this paremeter and cursor can not be shifted till operator correct it then cursor can be moved to another paremeter by arrow keys.

0,1,2,3,4,5,6,7,8,9 nümerical keys

ENTER to load written numerical value to memory.

While the parameter is entering for canceling the parameter is pressed CL key
If it pressed on the main page this key is used for changing language

While the parameter is entering for cursor movement is used
If it pressed on the main page, this key is used for mould change and copy

While the parameter is entering for cursor movement is used
If it pressed on the main page, this key is used for password

While the parameter is entering for cursor movement is used
If it pressed on the main page, this key is used for product set and reset

While the parameter is entering for cursor movement is used
If it pressed on the main page, this key is used for PQ Max page

Machine check

ALARM is used for entering ALARMLIST page

Machine parameter page

I/O page

1.2 Mode selectors

takes machine to manuel mode,in order to use manuel keys.

cycle starts when safety door is closed and it ends when the door is open.If safety door is AUTOMATIC,this mode doesn’t operate

in this mode can be started pressing CLAMP CLOSE button on the OP or external start button that it can be connected I2.6.Each cycle to start should be pressed start button

In this mode the machine runs full automatic and between two cycle there is waiting time.

is used for starting the heaters.

is used for starting the pump.

mould hight adjustment mode

1.3 Manual button:

Clamp Forward

Clamp Backward

Ejector In

Ejector Out

Group Backward

Group Forward

Suckback

Injection

Feeding

DOOR

Core 1 In

Core 1 Out

Core 2 In

Core 2 Out

Air ejector 1

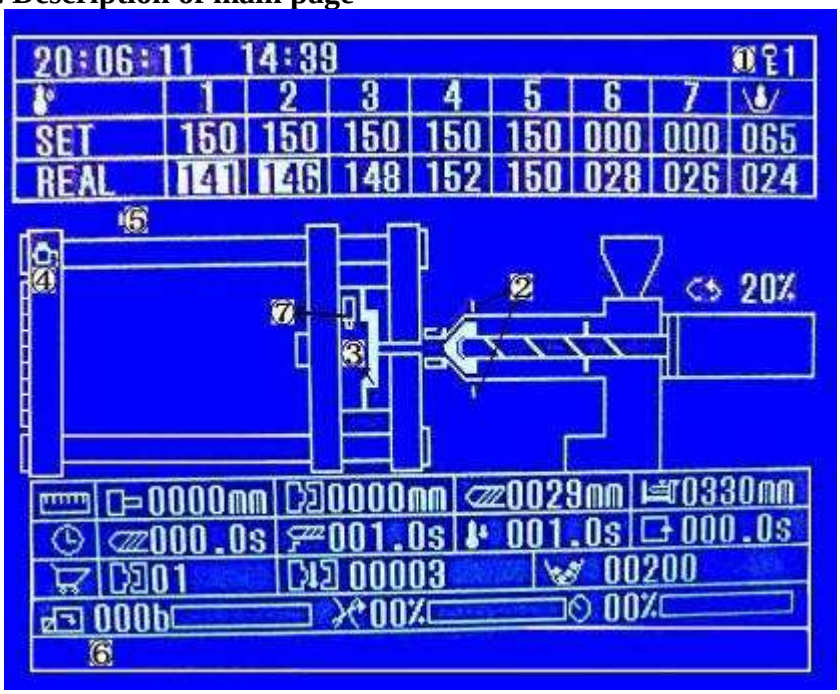
Air ejector 2

Mould hight adjustment backward

Mould hight adjustment forward

Every manual key has a LED light ,when the key is pressed ,the LED will light on.

2. Description of main page



① shows wheather protection key is unlocked that depend on its level allowed paremeters can be set.

② shows the position of end of feeding base on position trancedure lenght set in machine paremeters.

③ is filled up on the begining of holding

④ During automatic working when lubrication unit run , oil figure appear in this area

⑤ shows clamp opening position base clamp position trancedure lenght set in machine parameters.

⑥ fault line

⑦ core

is back pressure during feeding

is pressure set in mould paremeters for each motion

is speed set in moul paremeters for each motion

is system pressure if there is pressure sensor on the machine.

is ejector position

is clamp position

is injection and feeding position

is group (carriage) position

injection time

holding time

cooling time

shows how long one cycle with this mould paremeters

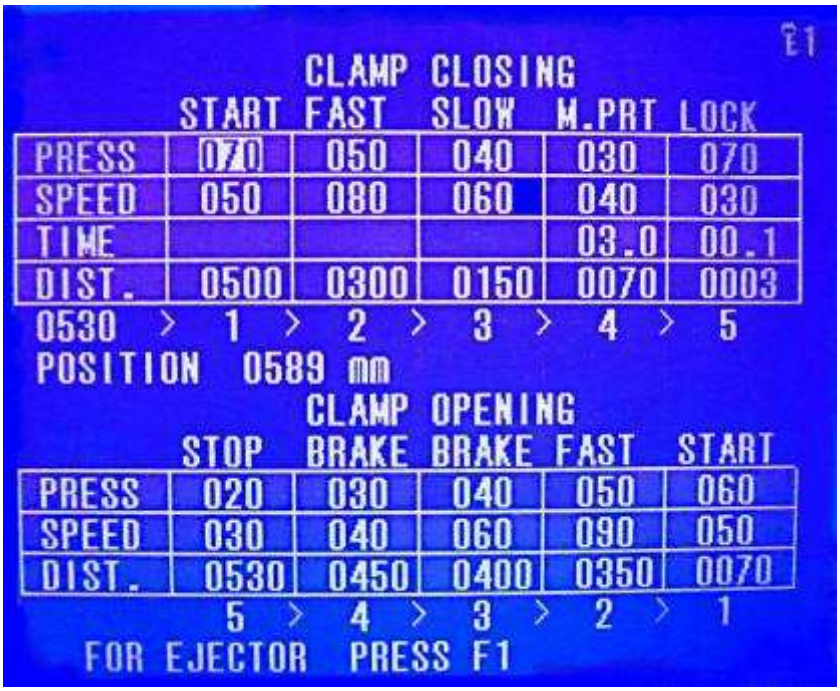
mould number

actual counter

set counter

3.CLAMP UNIT:

CLAMP CLOSING



There are 5 zones,

START is between last position of opening and 1st position of clamp close, for example; last position of clamp opening is 500mm and 1st position of clamp close is 490mm,1st zone functioned from 500mm to 490 mm with P1 and Q1 as 1st pressure and 1st speed successively set in the 1st zone. As a matter of fact, clamp opening never ends up on the last position, because of delays on response of hydraulic valves and inertia of clamp section with mould gravity, that's why always clamp last position is exceeded depend on last pressure and speed and breaking position, means that even if last position of clamp opening is set 500mm,it never stop at 500 mm, perhaps 510mm may be more as it was mentioned above depend on breaking position and speed and pressure and off course high speed before breaking zone. Therefore usually last position of clamp opening and 1st position of clamp closing can set at same value ,i.e., if last position of clamp opening is 500mm,1st position of clamp closing can be set 500mm as well.
Anyway this 1st zone of clamp closing is for starting of the movement against friction because of inertia of clamp and mould section and between arms or mechanical parts, that's why this zone can be narrow with high pressure and low speed ,i.e. P1=70bar and Q1=50%.

FAST is for fast closing, pressure is rather low than 1st zone and speed is high as much as operator need.

SLOW is for breaking right before mould protection. Usually question is what is the way to adjust correct position for mould protection zone? When new mould is fixed on the machine, in mould height adjustment page, clamp can be closed and opening by displaying actual position of clamp,

the correct position of beginning of mould protection zone is right before linking of clamp fixed part and movable part. Let it be 150mm which we read on the screen right before linking clamp parts, in this case beginning of breaking zone before entering mould protection zone can be chose 250mm to reduce speed and pressure. Base on this example between 500mm to 250mm clamp moves with high speed and from 250mm to150mm breaking before mould protection and now,

M.PRT is for mould protection. Another question, how can the correct point be found to finish mould protection zone? Best point is where two parts of mould touch each other which can be read from screen while new mould is being fixed on the machine in mould height adjustment page. This is M4,after M4 locking zone takes place till M5.In mould protection zone pressure and speed must be as low as possible .i.e. M4 is 70mm, clamp unit should cover the distance between150mm to 70mm in mould protection time, otherwise clamp goes back till last position of clamp opening with mould protection alarm. In automatic mode as much as open close number clamp tries being closed again automatically, if it has been opened because of mould protection.

MOULD PROTECTION TIME is a time over. to pass mould protection zone in this time. otherwise clamp goes back

LOCK is locking zone, between M4 and M5.M5 is zero or very near to zero position of clamp transducer (look at zero adjustment of clamp transducer).In the machine parameter there is a choosing concerning M5,it can be on or off, for more explanation look machine parameter section. In this section pressure must be high but speed is low to avoid the hydraulic chock, in fact no clamp is no need speed, just need pressure to lock clamp well.

LOCK TIME is used for being sure toggle mechanism locked well, after reaching last point on the clamp close way.

CLAMP OPENING

There are 5 zones too,

START is for unlocking. Here system need low speed, high pressure and this distinct should be short, first position is end of this zone can be 50 or 70mm,therefore usually around zero is the beginning of this zone.

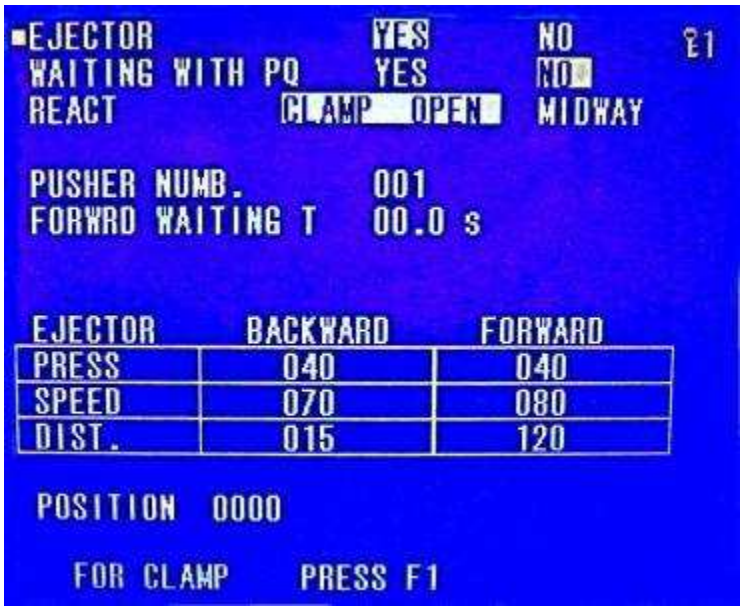
FAST is for fast opening, usually it is longest zone in opening,here pressure is moderate speed is high.

BRAKE is for slow down, before breaking, pressure and speed should be decreased in it

BRAKE is for breaking before stopping, pressure and speed should be lower than previous ones.

STOP is last zone before stop, pressure and speed should be lower than in 4th.
3rd,4th and 5th zone length are depend one high speed and all length of opening, but on the conclusion these last 3 zones function like step down function, hence speed and pressure had better been reduced step by step in each one and length of them cannot be more than 50 or 70 mm each.
By pressing F1 key,it is passed EJECTOR page

3.1 EJECTOR



Ejector Yes (or No) is choose on first line.

WAITING WITH PQ YES define as long as forward waiting time ejector forward last pressure and speed are in effect, NO in waiting just keep ejector forward valve active without pressure and speed.

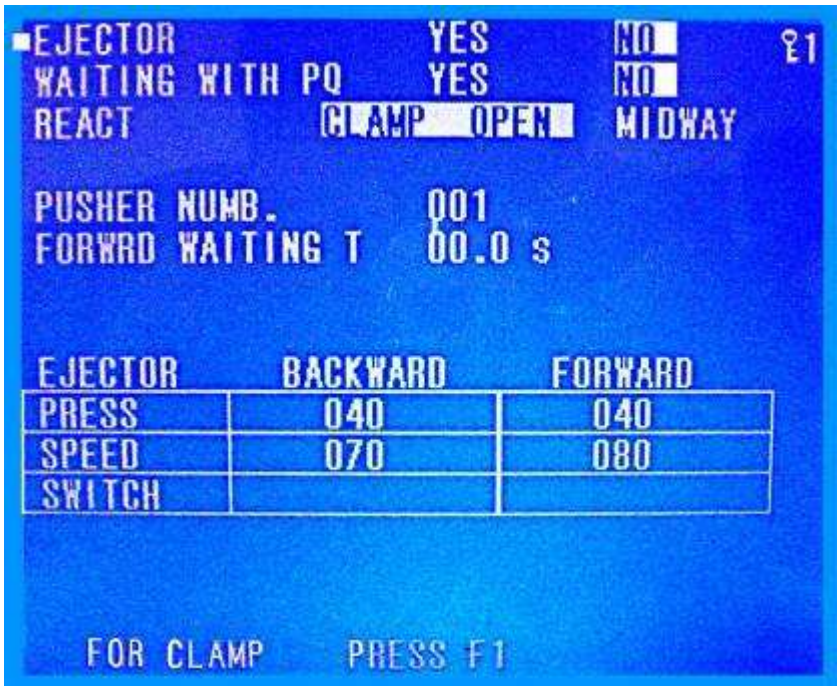
REACT CLAMP OPEN OR MIDWAY of clamp opening bring a choose to eject product while clamp opening when chosen midway that under that a line appear to set the position of clamp , so that when clamp reaches that position while it is opening ejector get active to move forward. Do not neglect that in order to be able to utilize this function , ejector and clamp should be supplied from different hydraulic power source , otherwise ejector motion effects clamp back speed.

PUSHER NUMBER is a number shows how many time ejector reacts.

FORWARD WAITING time runs when ejector reaches last forward position if timer value is not set zero.
If this time is not zero , when ejector reach forward position ejector forward valve keeps active as long as this timer .

By using this two features ejector can be run with timer . To came true this , first ejector should be chosen with switch in machine parameter instead of position transducer and second ejector forward and backward switch inputs should be connected to +24V DC directly. Now forward waiting time operate as ejector forward time and backward time. It shouldn't be forgotten choosing waiting PQ YES neither.

On the other hand when ejector is chosen working with switch in machine parameter page , ejector page turn to simple as below.



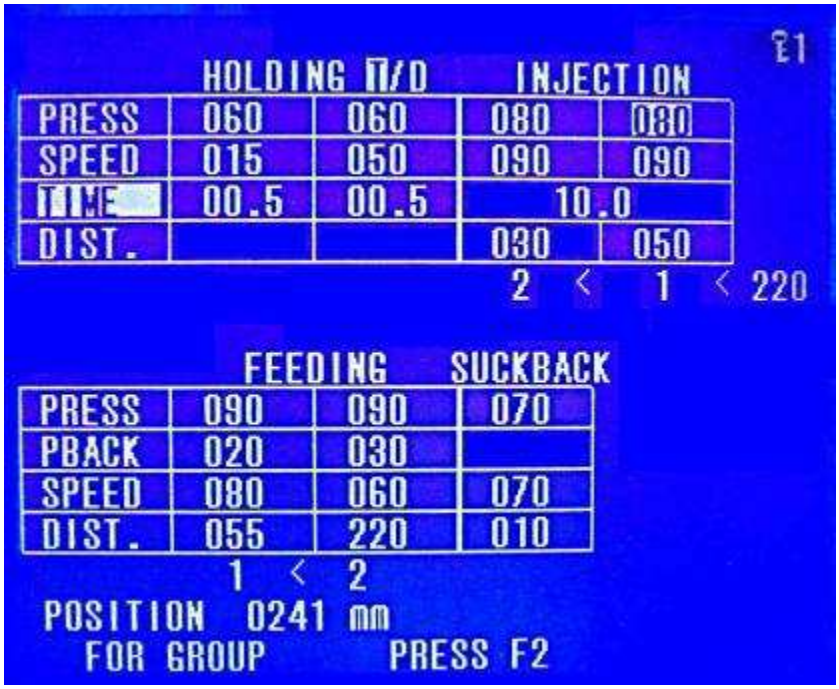
If ejector is functioning with position transducer ejector forward and backward movements have 1 speed, pressure and position, but if it is equipped by switch or working with timer by means of forward waiting timer as explained above just one speed and pressure enough for each direction.

If ejector has position transducer mechanically end of ejector back movement is zero point, therefore forward position can be set depend on mould.

If clamp is not open 1/3 of total opening stroke ejector does not go forward.
If pushing number is more than 1,ejector comes back till first back position not the last back position then push forward again, it comes to end of the back position only end of last react to reduce ejecting time for several eject, in order to be facilitate this feature obviously ejector should be equipped by position transducer.

If F1 key is pressed, it can pass CLAMP page.

4.INJECTION AND FEEDING



There are 2 main section. First 2 zone are for injection with high speed and high pressure to fill the mould then again 2 zones are for holding pressure. Usually there is no movement or quite short movement in holding stages. But in spite of that, there are 2 speed reference in holding stages too besides pressure references.
It must not be omitted that, as long as first 2 injection zones pressure references show us just upper limit of injection that injection pressure cannot be over this values but it doesn't mean that actual injection pressure follows pressure reference. Reference can be100 bar, but actual pressure can be 70 bar on the pressure gage i.e., but it can never be more than 100 bar, if it is, means that proportional valve adjustment is not correct.

HOLDING T/D choosing of time or position is for determining of length of holding steps. Holding starts with last position of first 2 injection steps then it goes on either base on time or positions of injection cylinder base on chose here.

INJECTION TIME is estimated or required or ideal injection time that does not include holding. In this time first 2 injection speed must be over, if it is not controller waits for 500ms more than gives warning that injection time is over without stopping machine but stopping injection process it pass to feeding and beginning of new cycle this warning is disappeared automatically.

FEEDING AND SUCKBACK are on same page. Filling or feeding has 2 steps with back pressure, suck back has only distance that is on effect after feeding. For example feeding positions 55 and 60 and distance of suck back is 5mm.Feeling is over at 60mm then 5mm suck back is occurred. If suck back distance is zero means that there is no suck back.

By pressing F2 key,it is passed GROUP page

4.1. GROUP

Group movable or fixed is a choosing , if it is fixed in automatic cycles group is always pressed to mould part on the fixed plates.

But if it is choose movable FEEDING-GROUP or GROUP-FEEDING appear on the next line to determine when group move in automatic cycle.

Pressure delay is a timer to be sure that group pressed well to mould, this time runs right after group reached end of the forward position by keeping 1st group pressure and speed as long as this delay, by this way after reaching the position which determines where group touch clamp fixed part, it is gone on being pressed to group towards fixed mould part all long PRESSURE DELAY time then injection starts.

Group forward and backward movements have 1 position,1 pressure and 1 speed.

How to find last position of group forward? What is the easy way?

Consider that zero of group position is mechanically end of back movement. Take the machine manual mode, close clamp then take group forward till nozzle touch fixed mould side. Read the group position, 358mm i.e., set 357mm as a last position of group forward, In this case first position could be 353mm i.e. Base on this example if group will run movable first position of back could be 353mm too and the last position of back movement could be 348mm.

Do not miss if clamp is not closed, manual or automatic group cannot be taken to forward.

If group motion control is done by switch group pressure and speed only one for each direction as you can see below.

In machine parameter , selection page bring us chose to run group with ruler or switch. When switch is chosen in selection page , group page turn to simple as above . Moreover , it is possible to work only one switch on the way of group back to stop group back motion by switch and by connecting carriage is forward input direct to +24V without using a switch to stop forward motion , pressure delay can be used as a duration of forward motion , hence carriage can work only back positioning switch and forward motion works with timer.

If F2 key is pressed, it can pas INJECTION page.

5. TIMES

COOLING TIME runs after holding, when it is over clamp starts open.

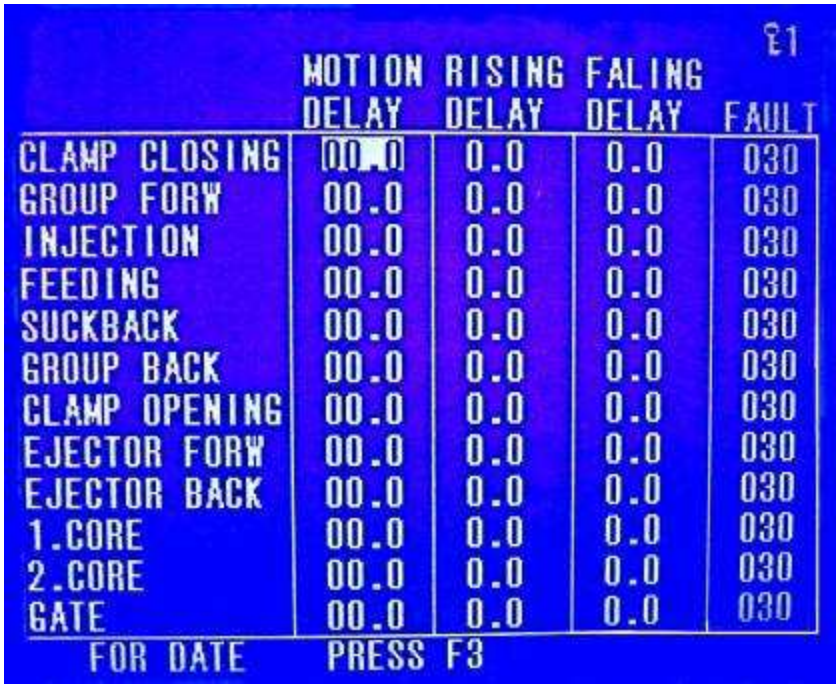
WAITING TIME is an required interval between end of the cycle and beginning of coming cycle.Automatic mode,when cycle finish machine waits as long as this time automatically,this one is for giving time to product leave the moulds,if machine has fotocell on clamp section,fotocell should give signal controller in this waiting time to be sure that product left mould.

Semi automatic or gate start mode,this time is set as a required waiting time,so that operator can accomplish his/her job in this interval.If operator late controller give OPERATOR warning that machine is WAITING FOR START.

EXTRUSION TIME is for turning screw before injection to fill mould cavities (mould has big cavity) without injection then when this timer is over injection starts fill the corners of mould up. Hence by small size machine, big cavity can be injected like pair of sole in the same mould.

BLOWING DELAYS start with cooling time then as much as **blowing times** air ejectors blow.

5.1. DELAY TIME



It is pressing **F3 key** , will be change this page.

MOTION DELAY is delay before any motion.

RISING DELAY is delay at the beginning of motion between directional hydraulic valve solenoid and building system pressure on.

FALING DELAY is delay at the end of motion between going system pressure down and hydraulic directional valve solenoid.

FAULT is time over for each motion, if it is over controller gives alarm.

5.2. DATE TIME

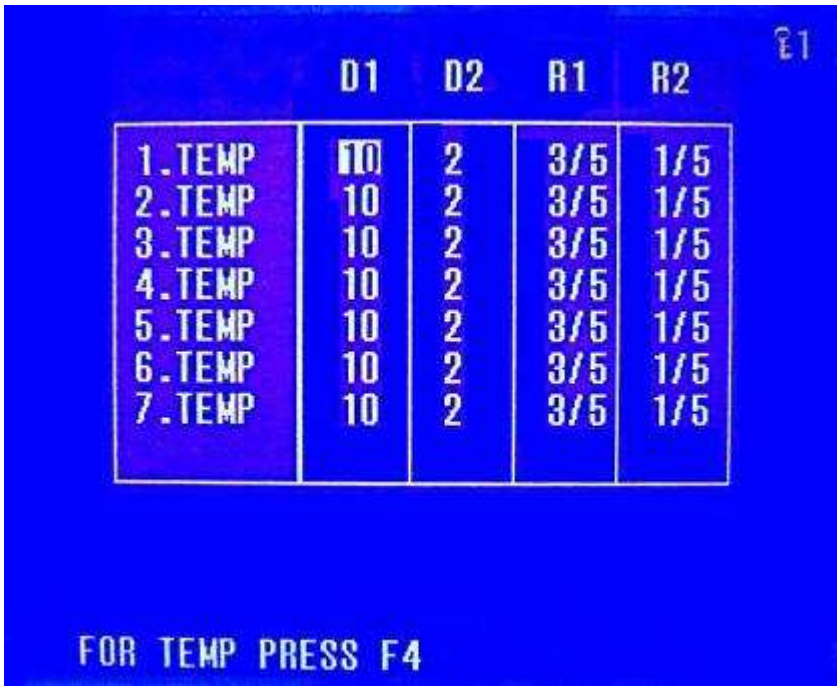
It is pressing **F3** key will be change this page.

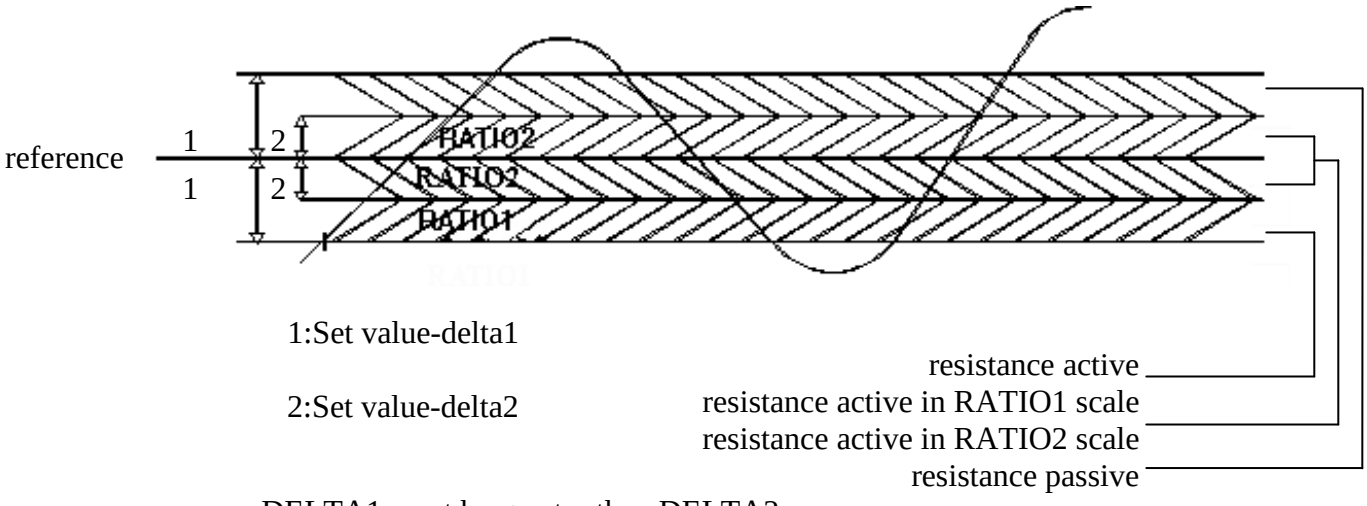
6. HEATERS

Standard program has 7 temperature zone. Each zone can control temperature up to 350 C.8th zone belongs to thermocouple of tank temperature.

TMP Tolerance is plus minus tolerance band on set value, if temperature goes out up or down from this band alarms occur. Over up is not a reason to stop injection and filling ,but over down makes stop the process to prevent screw and barrel.
Selection page regarding temperatures bring us adjustment of oil temperature.
Oil temperature offset is needed if thermocouple is not J type Fe-Constant in oil tank. If it is FE-Constant J-type offset value is zero, if it is another type offset value must be set base on difference between real tank temperature and indicated tank temperature on the screen.
Oil temperature alarm value is for just warning for operator.
Oil temperature stop value is for stopping pump motor.
If it is pressed F4 key, screen will change shown below.

6.1 **PID PARAMETER**
NOZZLE CAN BE CONTROLLED BY PERCENTAGE, there is 2 parameter to adjust it , one of them activation time is adjustable by percentage of duty, other is duty cycle. On time should be longer the OFF time, when temperature need decreasing OFF time should be longer the ON time, always notice proportion between these two timers, because by this way the energy are given to heater can be controlled. Small end medium size machine a 10 or 15 s duty cycle is proper , for example we can enter 70% and 10s , but for big size machine total cycle time is almost 20s

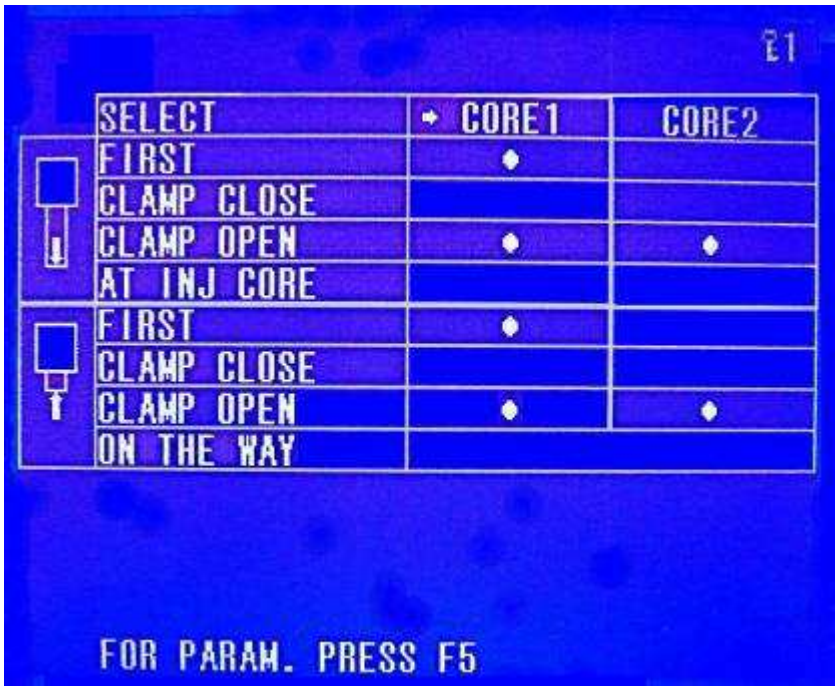




DELTA1 must be greater than DELTA2
RATIO1 must be greater than RATIO2 .

Controller is calibrated according to J type FE-Constant thermocouple characteristics.
D1 describes wide band and border of it is SET TEMPRATURE-D1,while temperature is comings up from cold to the set value, till the border of D1 band heater get continue energy but when temperature goes in D1 band temperature gets energy by PWM with ratio1=R1.
D2 describes narrow band and border of it is SET TEMPRATURE-D2,when temperature is in D2 band, heater gets energy by PWM with ratio2=R2.
It must be D1>D2 and R1>R2.
Usually D1=10 or 15,D2=1 or 3,R1=3/5,R2=1/5
Ratios and bands can be adjusted separately for each zone, after watching after a while temperature fluctuation these parameters are set precisely.
If F4 key is pressed,it can pass HEATER page

7.CORES



7.1. CORES is choose on SELECTION page, here is only displayed

CORE 1 by pressing **ENTER** key is selected; by pressing **Cl** key, it became disable.
CORE 2 by pressing **ENTER** key is selected; by pressing **Cl** key, it became disable.

CORE IN

FIRST, if there are 2 cores and these cores movement are same, which core will be go in first, is selected by pressing **ENTER** at this line.
CLAMP CLOSE, which core will work when the clamp closed, is selected by pressing **ENTER** key of this line.

CLAMP OPEN, which core will work when the clamp opened, is selected by pressing **ENTER** key at this line.
AT INJ CORE ACT if the cores want to make action during injection process, by pressing **ENTER** key it is selected.

CORE OUT
FIRST, if there are 2 cores and these cores movement are same, which core will be go in first, is selected by pressing **ENTER** at this line.
CLAMP CLOSE, which core will work when the clamp closed, is selected by pressing **ENTER** key of this line.
CLAMP OPEN, which core will work when the clamp opened , is selected by pressing **ENTER** key at this line.
AT INJ CORE ACT if the core want to make action during injection process, by pressing ENTER key it is selected.
ON THE WAY, if the core will go out when clamp medium position by pressing ENTER key, this facility will be active . And it will be entered. In which position core will go out. If this work is selected and there are two cores, both core will work when the clamp reach this position Clamp will stop and first core will go out and then if there is , second core will go out.

By pressing F5 key,it is passed PARAMETER page.

7.2.PRM

All core movements have pressure and speed value here.
DELAY is for right before core movement, if delay is not zero, core starts movement after this delay
T is a timer for each core movement. If timer value is zero, core operates with switches, if it is not zero, core activation time is defined by this timer to complete its action.

7.3.Get rid of core precautions while fixing mould with core;

One of the major headache is fixing a mould on the machine with the core , especially if mould has 2 core functioning with sequent. In such a case unless all switch and core valve solenoids connections are done 100% correct , controller does not permit operator to check core motion in manual mode , because of precautions in the program.

This program is so user friendly on this aspect.

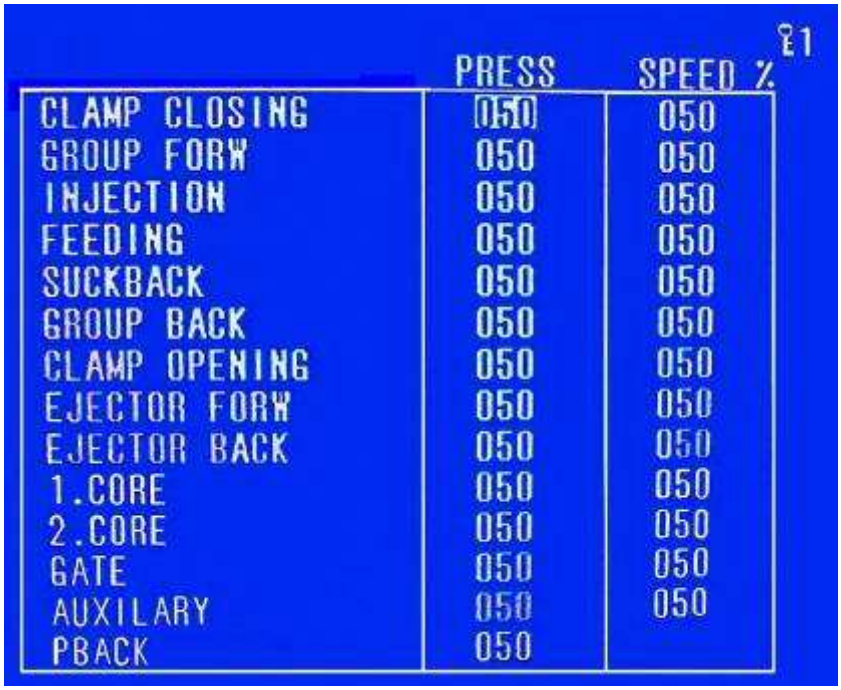
In manual mode , when manual mode selection key and core key are pressed together , controller activate the core without noticing precautions.
Same precautions are in effect for clamp motions as well and same facility is in effect for clamp manual motions too if mould has cores when operator press manual key and clamp backward or forward button , clamp moves without any limitation comes from core switch position.

These feature brings operators easiness and also think twice (because they should use two finger together at the same time) before manual core or clamp motions without precautions in order to be able to fix the mould with core on machine.

If F5 key is pressed,it can pass CORE page

8. MACHINE CHECK

These parameters can be changed only when first level password is unlocked.



This is section is only for starting up hydraulic section easy. Without considering any position or limitation on the movement, you can give each piston movement by using manual buttons in this page while system is in MANUEL mode. Only temperatures a limitation for injection, filling and suck back, if temperatures are set value, there is no any other restriction to get the movement in this page.

Movements pressure & speed can be set here independently. When you push any manual button, related pressure & speed are applied on analog outputs with activation of the related digital output. Hence only related value is active and analog outputs are assigned set values entered on this page. Movement goes on unless you leave Manuel button, without any position or switch or security and safety control , except temperatures.

This is a very good advantage to start up machine hydraulic system or to find a trouble on the hydraulic system. Position transducers are not affected here , but actual position of the pistons can be watched while we are on this page, on the right ACTUAL PARAMETER windows. This feature helps us to consider control system & hydraulic system are working together well or not.

9.MACHINE PARAMETERS;

On the main page below parameters appears;

MAX SYSTEM PRESSURE is for scaling of analog output refers to pressure reference, if this value is set 140 bar i.e., pressure ref analog output reaches 10volt when any pressure value is set 140 bar. As for speed this one is not necessity, because speed settings are percentage.

LUBRICATION TIME is defined how long the lubrication will work ON-OFF.

LUBRICATION ON is defined the lubrication ON time.

LUBRICATION OFF is defined the lubrication OFF time.

CLAMP OPEN-CLOSE NO Define how often lubrication occur. For example; this number is 50, means each 50 close-open of clamp unit starts lubrication, this counter is incremental, let's say 3 close-open occurred in Manuel mode, 2 close-open occurred in half automatic , in this case in automatic mode end of 45th close open a 50 counter is over & Lubrication happens automatically as long as lubrication time & although there is pressure switch , if there is no signal coming from this switch in oiling time , controller warns us.

Whatever the value of lubrication counter end of the first automatic cycle after power on controller makes lubrication and clear lubrication counter.

REDUCTOR PRESS, while the mould hight adjustment is making this unit will work with this pressure.

REDUCTOR SPEED, while the mould hight adjustment is making this unit will work with this speed.

PS OFSET If machine has pressure transducer on accumulator output or pump output this parameter must be set as below.

When OP2228 is used with CC4000 **OFFSET= (Measured value on analog input as Milivolt x 4095) ÷ 10000**

PS GAIN is a value as bar that usually pressure tranceducer manufacturer describe what is maximum sensor output against max pressure which sensor can measure.For example sensor gives 10 bar at 250 bar.Anolog input of CC4000 is maximum 10V, therefore clamp sensor gain is 250 bar.

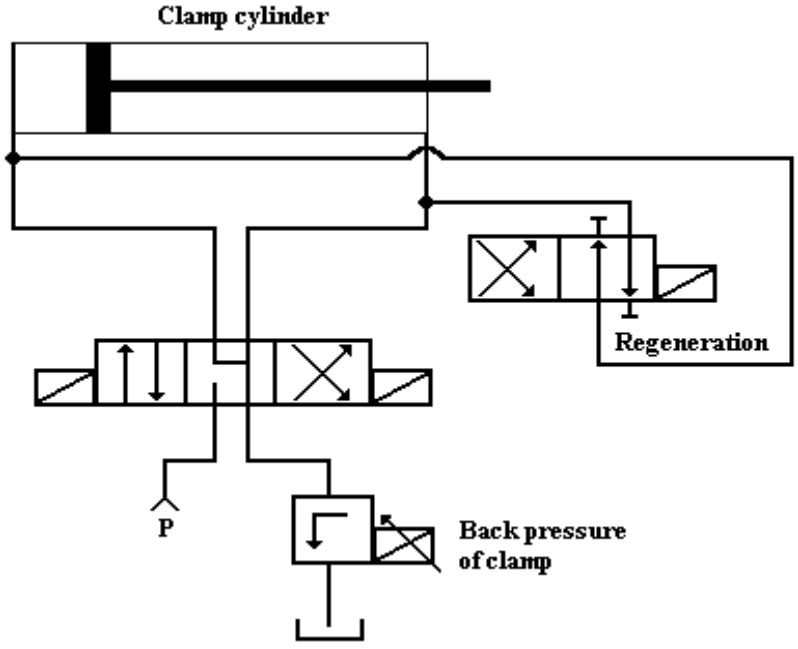
RPM coefficient is a divider to divide the number of counted pulses coming from screw while it's turning.

If MACH PRM key is pressed,it will pass SELECTION page

9.1. Selection

9.1.1 REGENERATION is a feature on the clamp hydraulic section. Sometimes clamp unit get oil from pressure line & front of clamp cylinder while clamp is going forward. Usually oil in the front of cylinder goes to tank , if there is no regeneration. This feature brings us less oil consumption & high speed closing. If regeneration is YES regeneration output get active from first position of clamp to slow down position of clamp closing.

9.1.2 CLAMP BACK PRESSURE is a proportional pressure control value on the way to oil returning tank from tank output of clamp bidirectional valve. Hence when the pressure is created on this way by this proportional valve during mould protection or breaking (right before stoping back during opening) , clamp movement faces an extra force because of back pressure against the movement inertia. Above diagram shows us a typical application regarding regeneration and back pressure.



If clamp back pressure is YES, related anout of controller (CC4000) gives a reference voltage ,depend on the set values of back pressures in the clamp parameter page(look at section 1.3)

9.1.3 CLAMP ACTIVATION Which parts of automatic cycle, clamp piston forward valu selenoid is wanted to be active, this is the selection. Sometimes toggle system piston should be kept on under pressure, during the injection.

9.1.4 GROUP ACTIVATION In INJECTION, in FEEDING, in SUCKBACK, till OPENING can be choose to make group (carriage) forward valve solenoid active so that nozzle will press fixed plated well. Off course clamp or group or both of them are choose active, during the other movement and if they do not have separated pressure and speed control value they will see same pressure & speed value of the main movement. But if they have independent pressure & speed clamp & group will see last pressure & speed of their last step in their movement.

9.1.5 GROUP & RJECTOR POSITIONING FEATURES Depend on machine , sometimes group and ejector can not be equipped by position transducer (ruler) and switch neither, except group back switch
So if there is no switch or position transducer I, ejector forward , ejector backward and carriage forward motion can function by timer. But to use timer here selection must be SWITCH and then instead of ejector forward , ejector backward and carriage forward switch , these 3 inputs should be connected to +24V. Please read ejector and group paragraphs how to use them with timer .
Ruler here shows us functioning by transducer , so if for example forward movement is choose by distance, backward cannot be by sw or timer.
Sw shows us positioning by switch.

9.1.6 PRS SENSOR is a pressure switch on the lubrication pomp or on the last point to be lubrication on the system to measure lubrication oil pressure. Some of lubrication system has this pressure switch, but some of them doesn't have. If system has it must be YES. If it is YES, in the OILING TIME this pressure switch must be active, but it doesn't mean that when this switch is active lubrication is over, no lubrication waits till end of the lubrication time, so pressure switch only to be sure that lubrication executed proper.

9.1.7 POWER ON Temperature on or off bring us an easiness that when power on heaters get on automatically without pressing heaters ON button on the operator interface, but if it is off after power on, heaters on button on the operator interface must be pressed to make heaters on.

If MACH PRM key is pressed,it will pass RULER ADJUSTMENT page

9.2. Transducer adjustments

On the transducer adj page when **RULER OFSET** key is pressed , left right corner selected function box shows us ruler offset. In this case zero adjustments of transducers can be done as follows. But to get in ruler offset section OP2228 must be in MANUEL mode, otherwise it give us warning , so before pressing **RULER OFSET** key do not forget to take OP2228 to MANUEL MODE.

9.2.1 Clamp Ruler Offset Adjustment

Press clamp forward button like manual mode, clamp goes forward with P&Q was set on the transducer adjustment page.

when movable mould part link fixed part up toggle mechanism must be locked position, if it is not before zero adjustment take all clamp section to back by using mould height adjustment then do again clamp position transducer zero adjustment. When toggle arms reaches locked position clamp position transducer reach its zero position , release clamp forward button as soon as button is released CC4000 get this position is zero position of toggle clamp.

Clamp tranceducer length, Adjustment pressure(P) & speed(Q),clamp transducer position without subtracting offset value are on the table. As an extra Reductor forward & reductor backward pressure &speed adjustments are available. This reductor here means hydro motor actuated reductor for taking clamp section to back or forward , base on mould height , then after this first adjustment , second adjustment is done for zero point of clamp transducer.
Hydraulic clamp systems, clamp transducer zero point is accepted where the mould parts link up each other. For zero adjustment, the way below follows;
-If there is mould height adjustment first this one is done by hydro motor actuated reductor. Here hydro motor use reductor forward and backward P&Q on the clamp transducer adjustment table.
-Then by pressing mould forward (clamp close) manual button, movable part is linked fixed part up. This point is the zero point of this mould, therefore when clamp close button release CC4000 save this position for this mould as a zero point. When mould change, if hydraulic clamp is

selected zero point change automatically. If new mould zero point set before, when mould number change, the zero point of this mould automatically is going effect. But if mould zero point did not set before , each new mould need new zero adjustment for clamp , if clamp is hydraulic system. During clamp zero adjustment in the position column , clamp transducer position is shown.

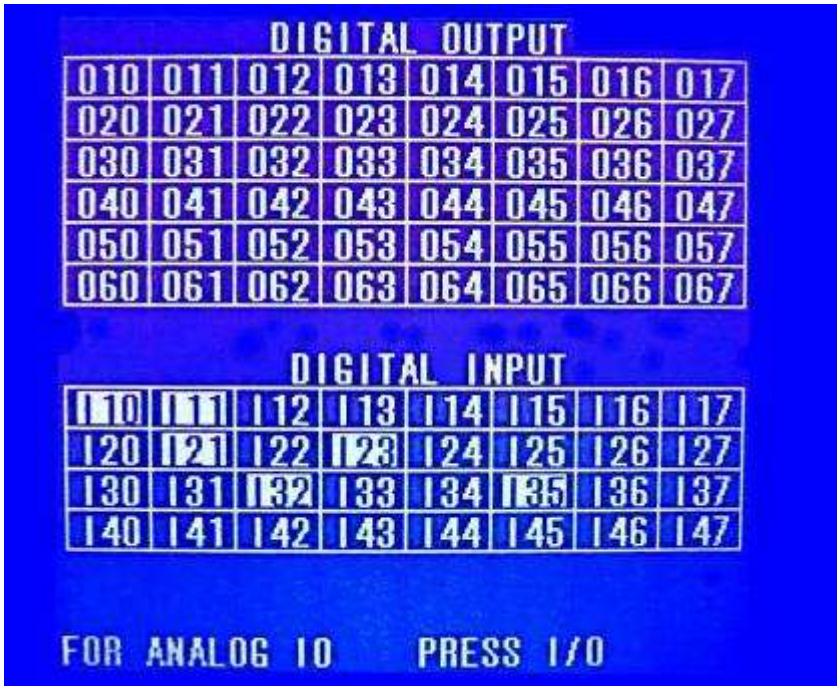
9.2.2. <u>Injection transducer zero adj</u> Notice, heaters must be on and reached set value. Press injection button till screw reach last position then release button, last point of the screw on the injection way is zero point of injection transducer , where button is released CC4000 get this point as a zero point of injection. The position of injection cylinder is displayed on the position column of the table.

9.2.3. <u>Group at carriage transducer zero adjustment</u> Press group backward manual button till group press back on it is mechanical construction. Back position of group is zero of group transducer. When group press back release group back button to make zero this point.

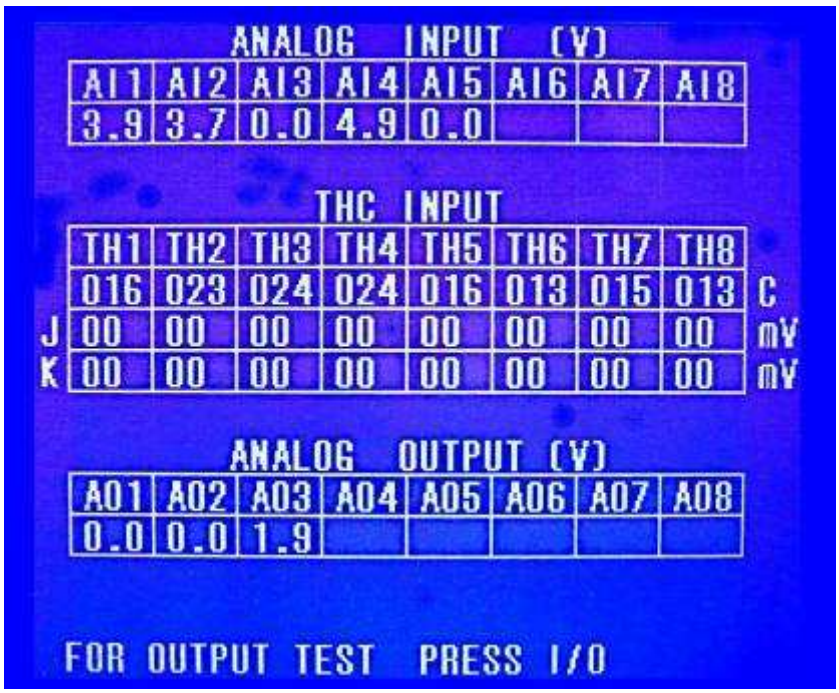
9.2.4. <u>Ejector transducer zero adjustment</u> Press ejector back manual button , when ejector completely back position this is the zero point of ejector, release the button , zero adjustment occurred automatically. If group or ejector is selected by switch or timer operation their zero adjustment do not make sense.

10. I/O

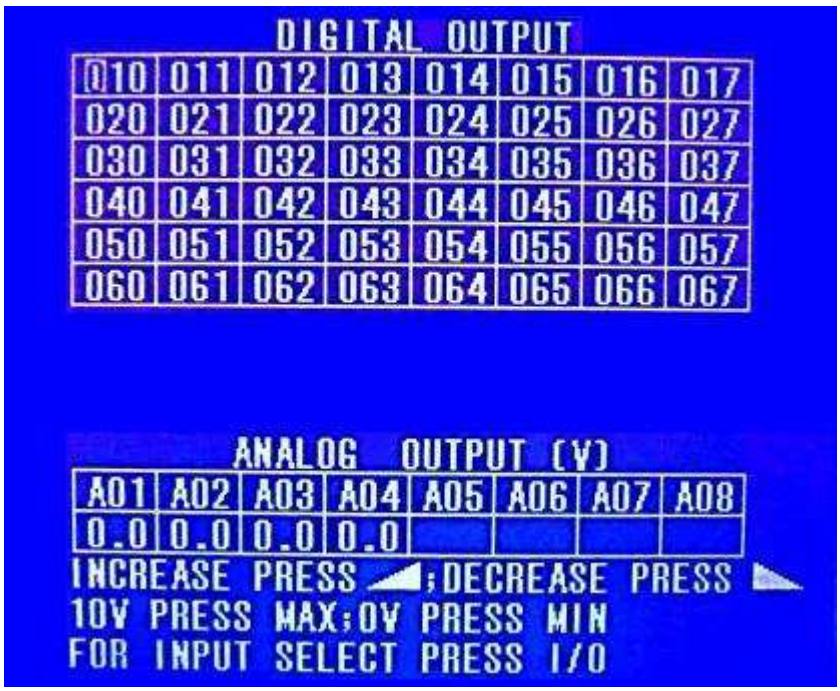
Extra 24 digital output card and 8 channel 10 bit dac card cannot be used with OP2228. When this section is entered all digital inputs and outputs appear on the screen to watch actual situation of the machine.



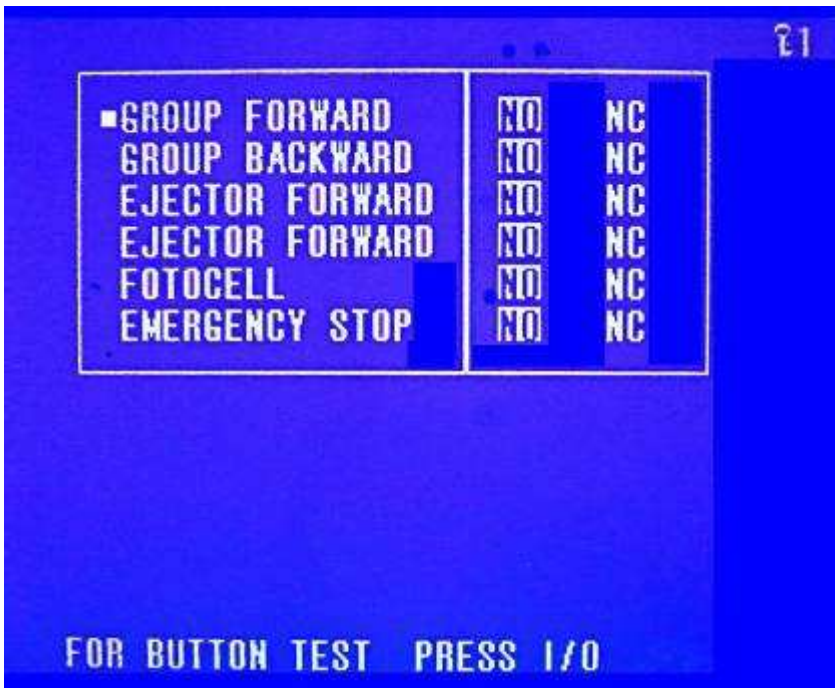
When **I/O** key is pressed all analog inputs and thermocouple inputs appear on the screen to follow actual all analog inputs.



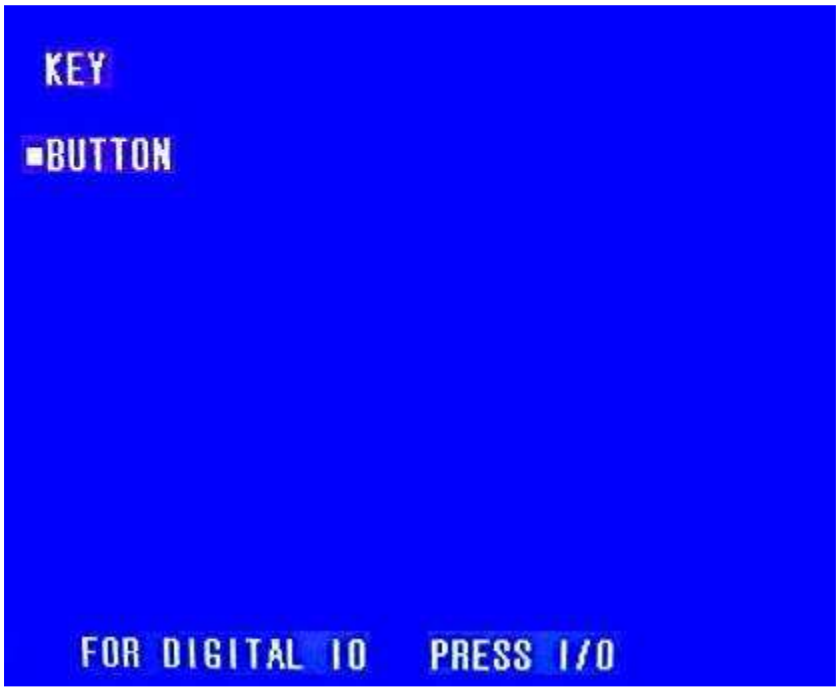
When **OUTPUT TEST** is entered, each digital out can be forced active and passive by choosing digital output with arrow keys then press active makes output active, press passive makes output passive.
In the same page by arrow keys analog outputs can be choose and their values can be max and minimum by **MIN** and **MAX** keys or by using incrementing and decrementing buttons under left and right arrow keys successively analog output values can be changed step by step.



When **INPUT SELECT** is entered, Contacts position of defined digital inputs in this page can be opted to NORMALLY OPEN=NO or NORMALLY CLOSED=NC.

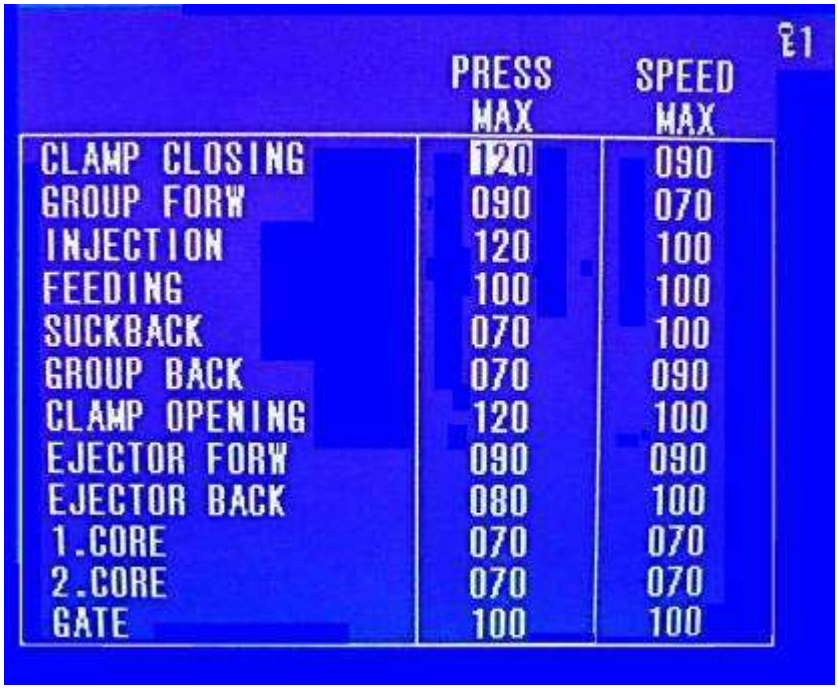


If numeric and arrow keys are wanted to be tested, come up to KEY line by arrow key then by pressing numeric and programming and arrow keys their values can be seen on the key line, if you want to escape this section press 0 key first then main page make you return previous page. When cursor next to address, function and manual keys can be tested by pressing them, when any one of them pressed related led light on, so both led and key were got tested.



If the system is main page below key it will work.

11. Pmax and Qmax

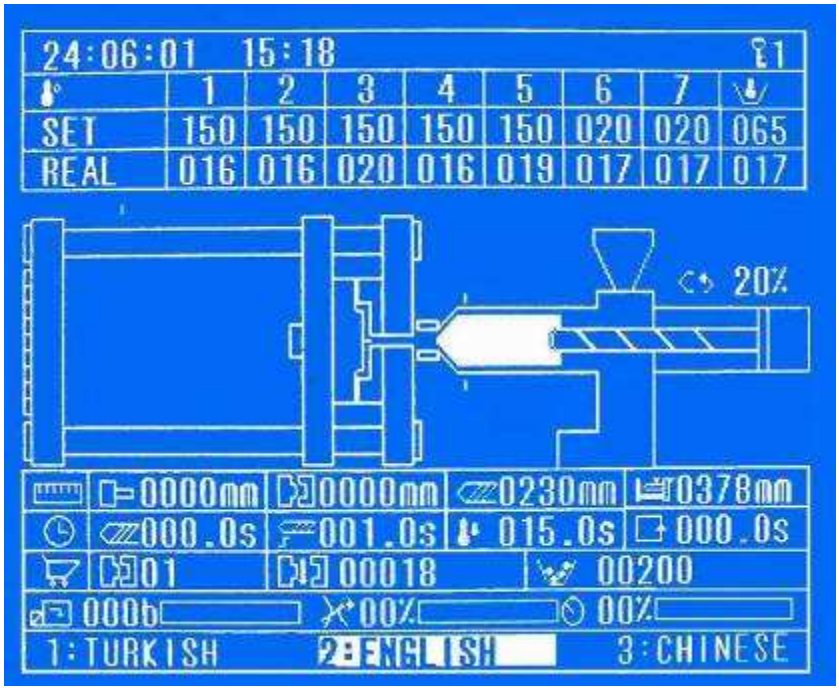


Each movement maximum pressure and maximum speed are defined here & these max value appear on the each adjustment page.
For example;
Clamp Close max P=100 bar.
Clamp Close max Q=%100 were set here.
When we go clamp close page, we will see these value in right up window next to date window.
If operator want to set any value bigger than those , a question mark appear next to this parameter , to warn you that this set value is not acceptable because exceeding maximum value.

12. Language

When the system is at main page, if it is pressing the key,

can be Chinese or English or Turkish.
After controller initialize itself , if Operator Interface program is English , English Language is chosen by controller automatically. To select language numerical key is pressed.

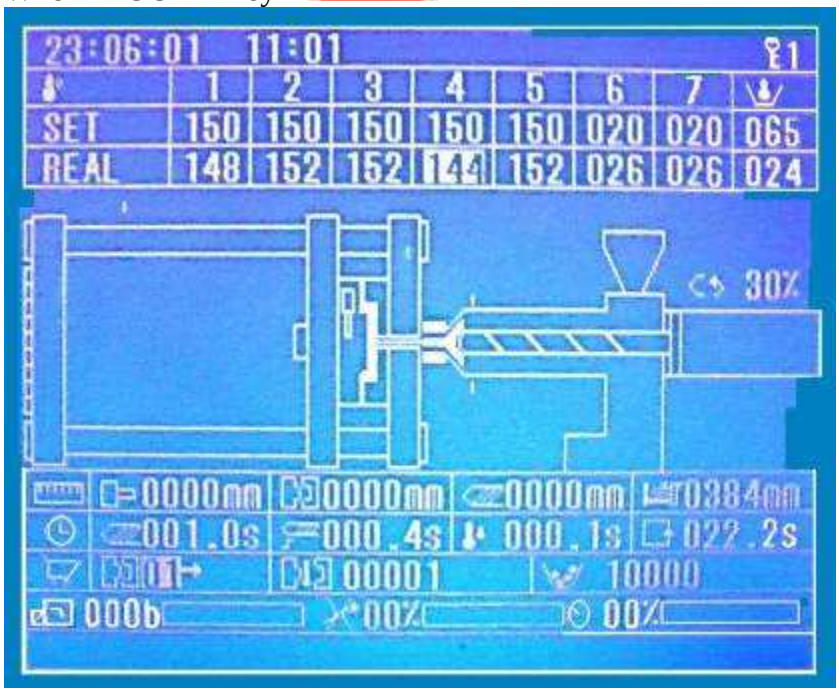


To select language related key is pressed. To escape this section is pressed MAIN PAGE key

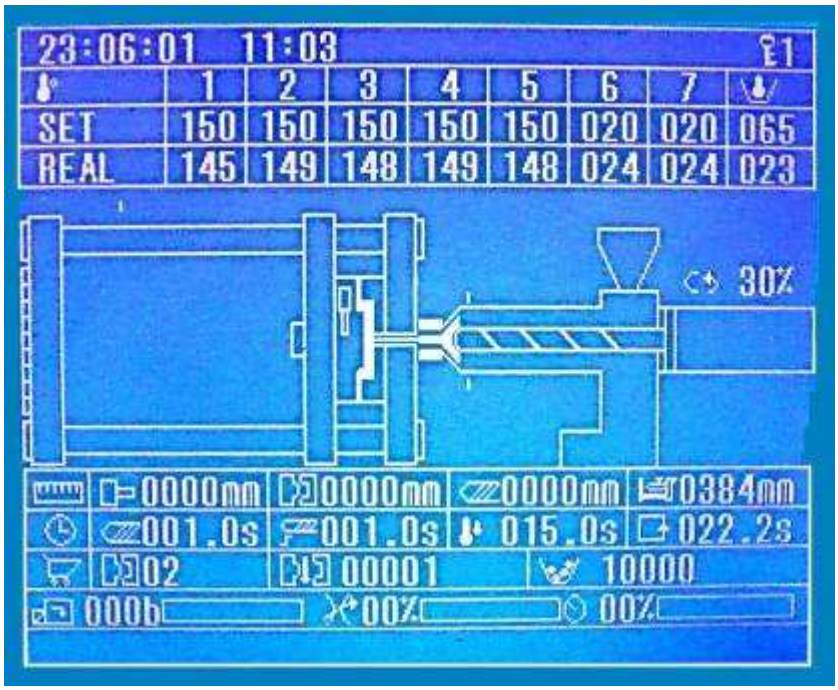
13. CHANGING and COPPING MOULD NUMBER

In order to be able to change mould number or copy present mould to any mould number system should be in **MANUEL MODE.**
This control system can keep parameters up to different 50 molds. To recall any one of recorded mould parameter.

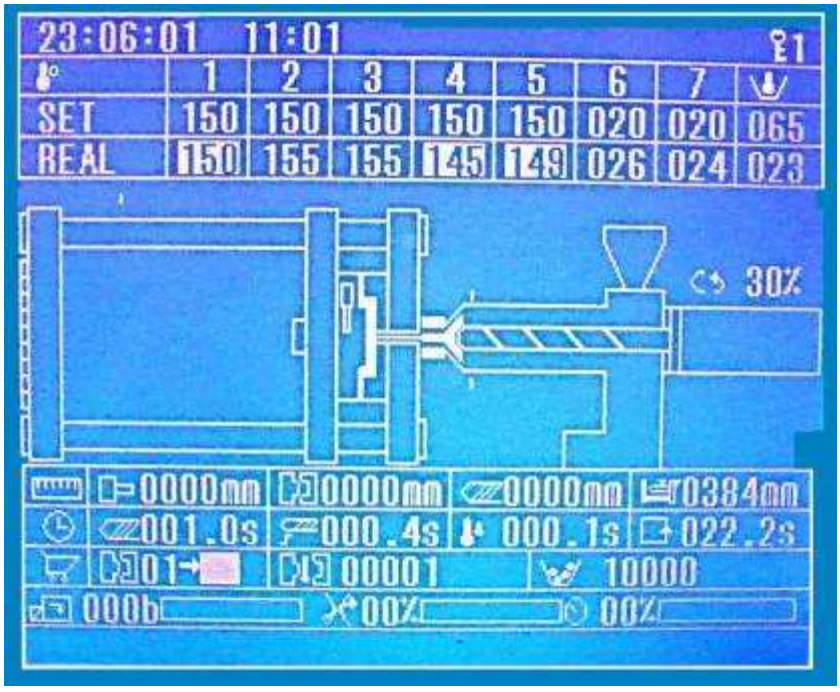
When MOULD key



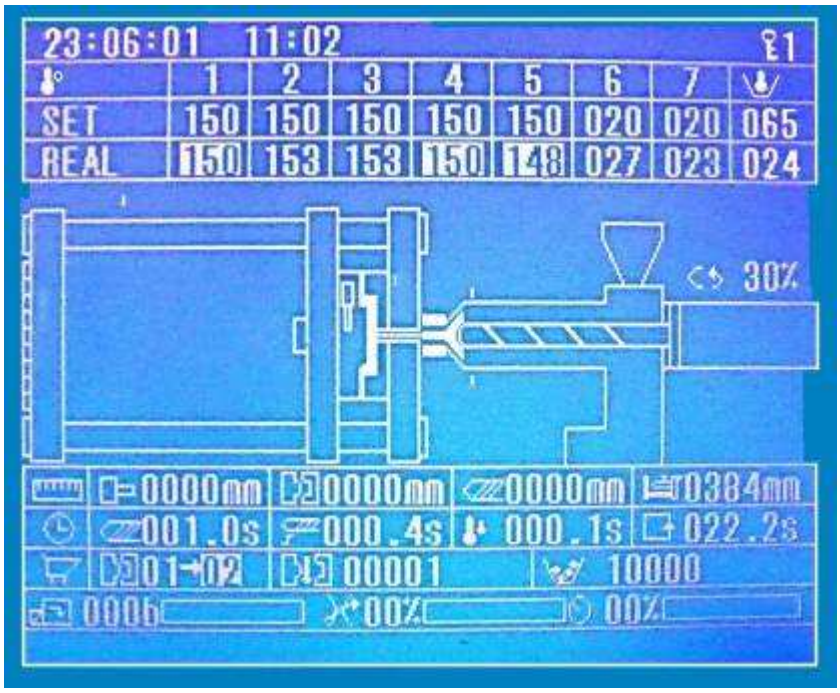
Here mould number can be changed or copy in another number. To change the mould number just entering new mould number is enough then press ENTER



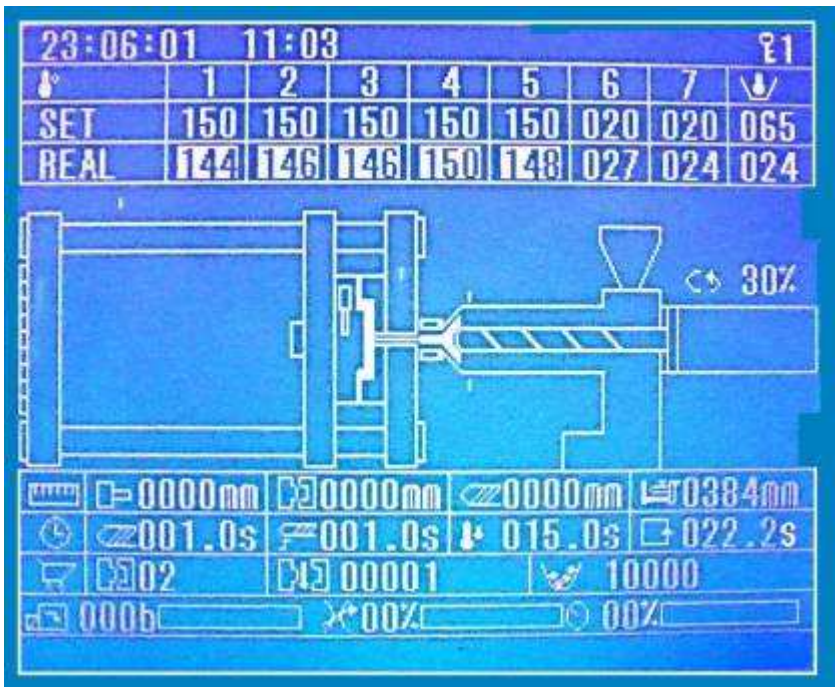
To copy mould number press right arrow key



Then write the mould number to copy present mould parameter in



When ENTER pressed parameters will be copied and mould number changed



To close setting of mould number press **MAIN PAGE**. Without closing this option machine cannot move

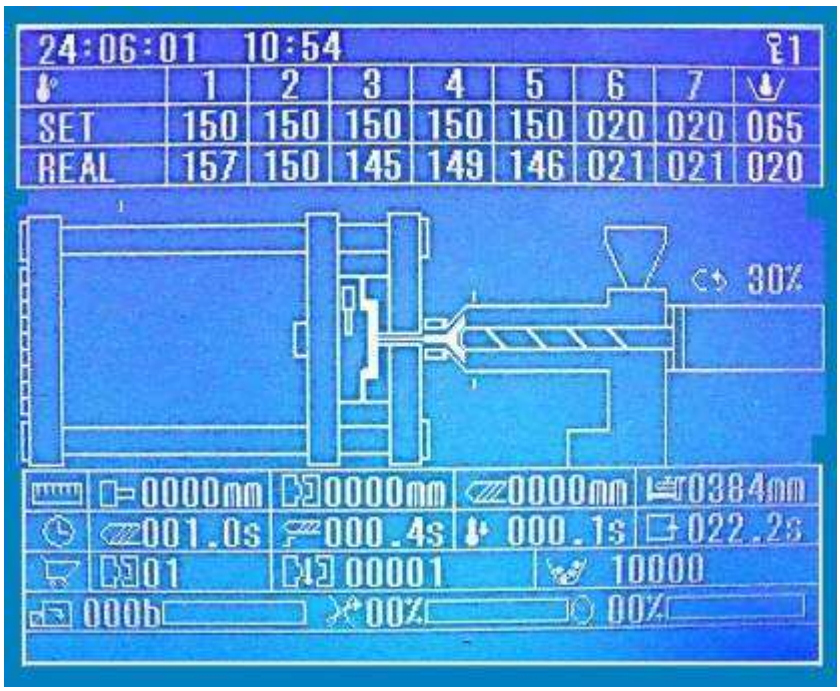
14.Counter

Setting or erasing counter is just possible if system in **MANUEL MODE.**

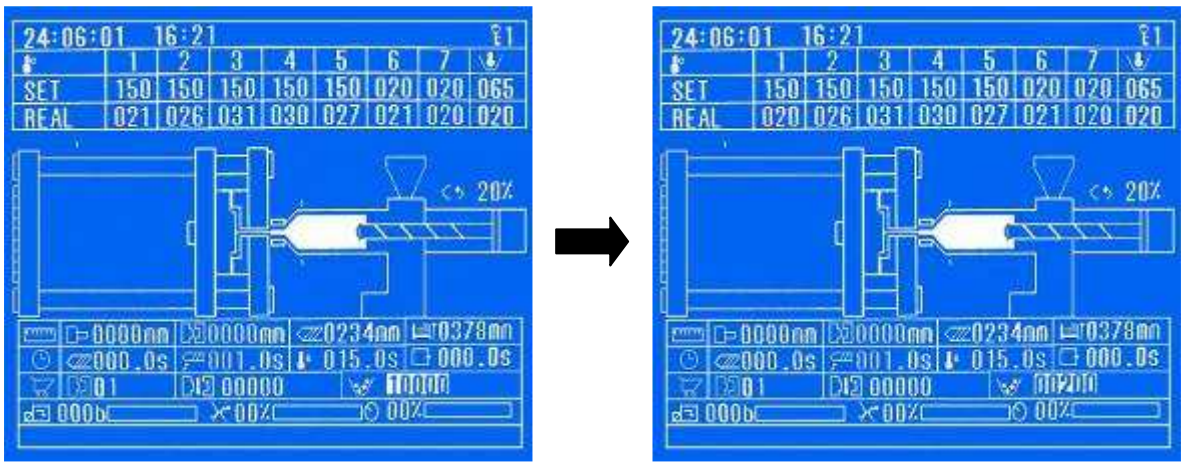
Press

key

Set how many cycle you need and press ENTER. When counter reach this amount machine will stop and give you warning that counter is full.



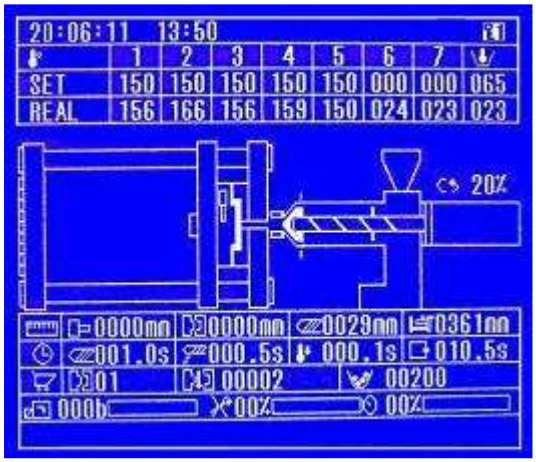
While window exist on counter set section , pressing **MAIN PAGE** erases actual cycle counter

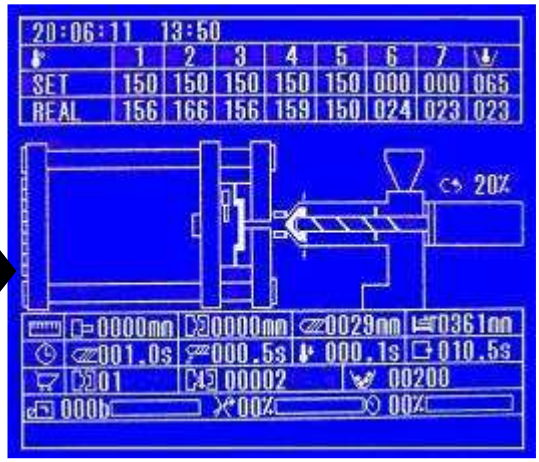


By pressing CL key, actual counter can be made 0. Without closing option by **MAIN PAGE**, machine can not move.

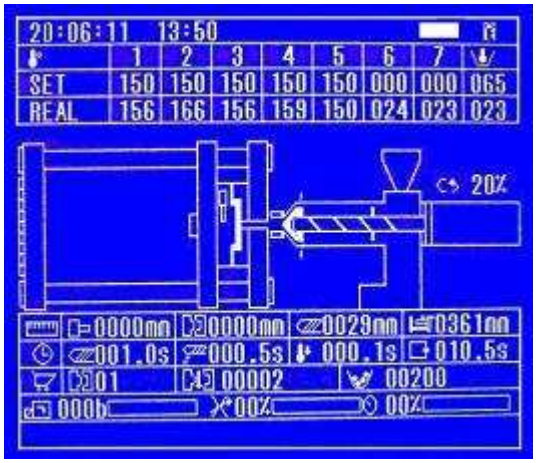
15.Passwords

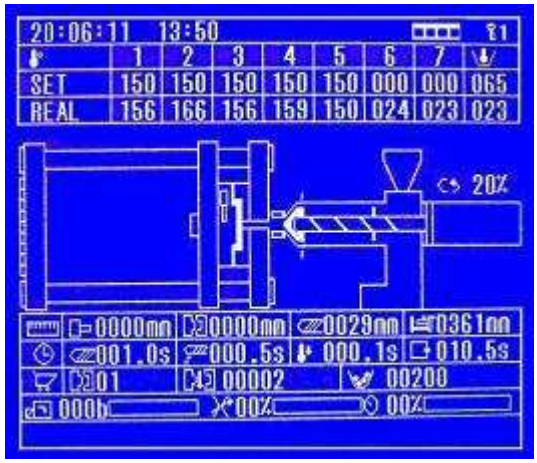
Password cancelling, press key, password figure and level no will be flash, press **0** key after password figure will be disappear. In this case we can not change any parameter on the screen.



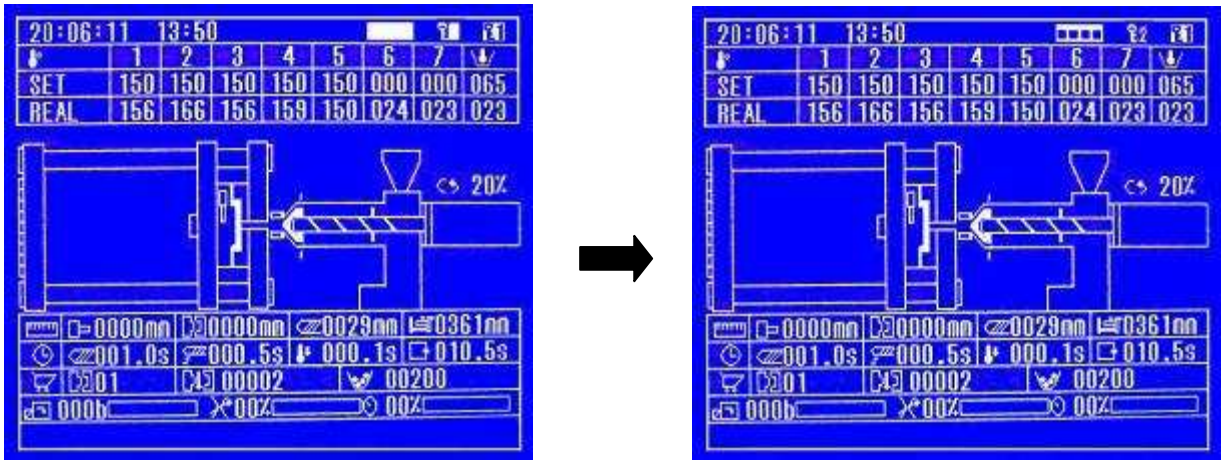


password activation, press key, password figure will be flash ,which level will be flash, which level will be active, we will press this number (1,2 or 3) after we will eater password related level, after pressing ENTER this level will be active, by pressing **MAIN PAGE** key flashing will be off.

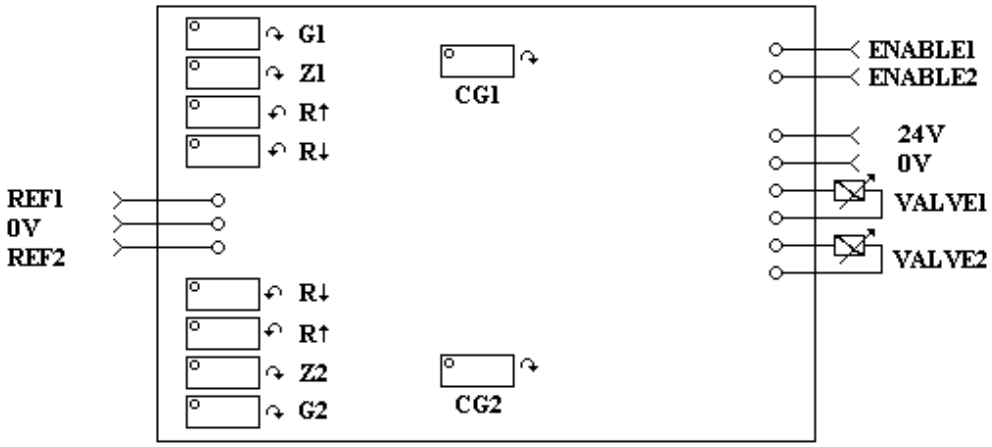




password changing, if the LEVEL 1 is active, we can change LEVEL'S password. For this first press again key, the figure will be appear on the screen, which level password will be changed, we will write this number after, what will be password, we will write this number and press enter by pressing **MAIN PAGE** key, we can exit this section.



16. <u>External PD3300 Proportional valve adjustment</u>



16.1 <u>Pressure adjustment</u>

16.1.1 Choose **<u>Machine parameters</u>** page from OP.
-Set MAXIMUM SYSTEM PRESSURE minumum 100 bar,maximum 140 bar.
-Second page in Machine Parameters,you will see ADJPQ,enter this page.
-Write P=000 for GROUP BACK pressure,Q=050 GROUP BACK speed.
- Start pump.

16.1.2 Usually first channel on PD3300 is for pressure,so if you connect like this;
-When you pres group back button you see 0V on REF1
-Look pressure indicator,pressure indicator must show max 5 bar now.If it is high or zero try to adjust it arround 5 bar by Z1.

-Set Group pressure P=050 bar now.(Group back pressure) pres group back button,you must see a pressure,if it is higher then or less then 50 bar adjust it by G1
-Set Group back pressure 110 bar press group back button,look indicator if it is less try to increase it by G1 again.

16.1.3 If you can not increase it up to 110 bar by G1,try it by CG1.If you use CG1 adjust indicatot more than 110 (it can be 130 bar) then reduce it by G1.If you change 1 adjustment you must check and adjust again zero adjustment by Z1.After zero adsjustment you must adjust again set pressure valve by G1.

16.2 Speed adjustment

16.2.1 Set Group pressure=050 bar,set Group back speed Q=005.Press group back button,look pressure indicator and reduce indicator by Z2,when pressure begin going down on the pressure indicator leave it and measure valve 2 voltage and write it down.

16.2.2 Make temperatures are ready,take group back and in ADJPQ page;
-Set feeding pressure P=0070 bar,feeding speed Q=100
-Press feeding button,look screw turning speed till you reach max speed or till you see decreasing on the speed,adjust G2 and measure valve 2 voltage and write it down.

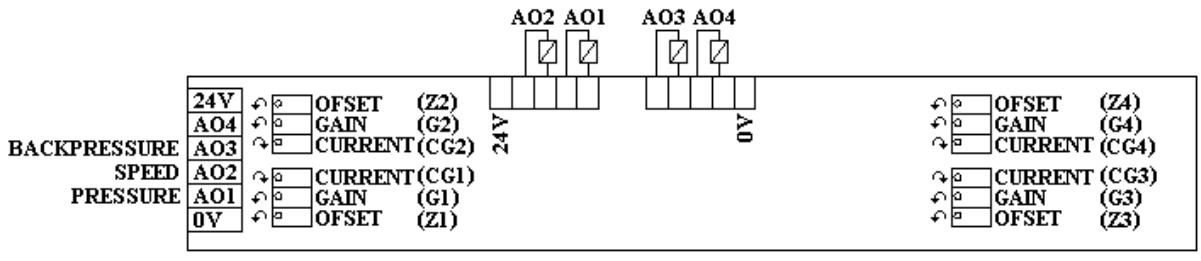
16.2.3 Inform us after adjustment what is

P=0 bar	valve1 voltage
P=max	valve1 voltage
Q=%5	valve2 voltage
Q=%100	valve2 voltage

16.3 Mechanical adjustment

2 screw you should see on the P/Q valve.
-One of them is big and has contra nut.This one is mechanical max pressure adjustment.After electronic adjustment set group max system pressure in ADJPQ page.
Press group back,look indicator,and adjust mechanically pressure till you see decreasing from maximum pressure.When you see it increase little bit mechanical adjustment and fix it by contra nut.
-Other small screw should be loosen out to take air out from hydraulic system.
-If there is an air in the hydraulic system pump run very noisy.
-If air always coming check vacuum pipe between tank & pump.
Advise:Beter to fix pressure indicator on output of P/Q block,before adjustments.

17. CC4000PD Proportional valve adjustment



17.1.Pressure adjustment

17.1.1 Choose **Machine parameters** page from OP.
-Set MAXIMUM SYSTEM PRESSURE minumum 100 bar,maximum 140 bar.
-Second page in Machine Parameters,you will see ADJPQ,enter this page.

-Write P=000 for GROUP BACK pressure,Q=050 GROUP BACK speed.
- Start pump.

17.1.2 Usually first channel on CC4000PD is for pressure,so if you connect like this;
-When you pres group back button you see 0V on REF1
-Look pressure indicator,pressure indicator must show max 5 bar now.If it is high or zero try to adjust it arround 5 bar by Z1.
-Set Group pressure P=050 bar now.(Group back pressure) press group back button,you must see a pressure,if it is higher then or less then 50 bar adjust it by G1
-Set Group back pressure 110 bar press group back button,look indicator if it is less try to increase it by G1 again.

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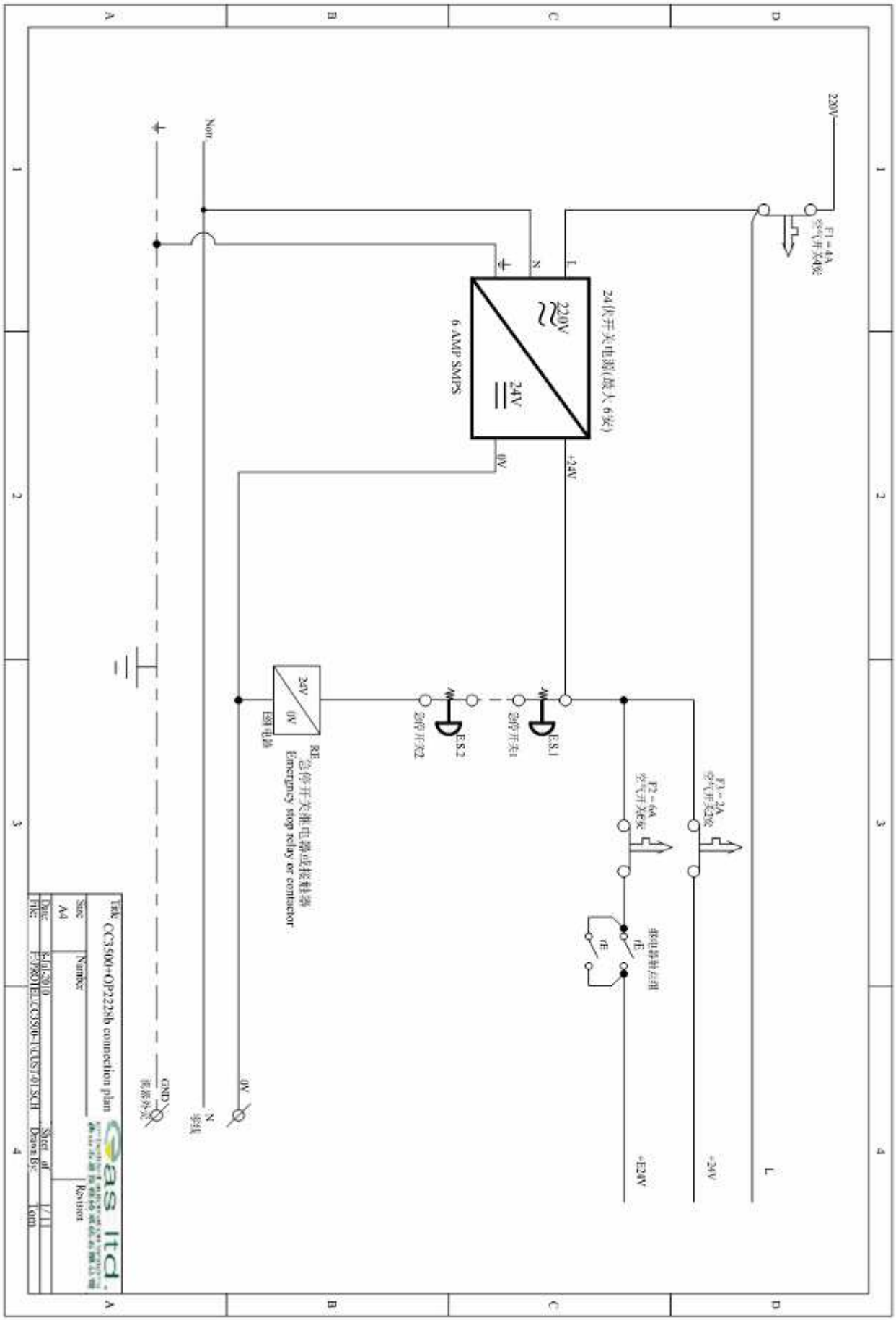
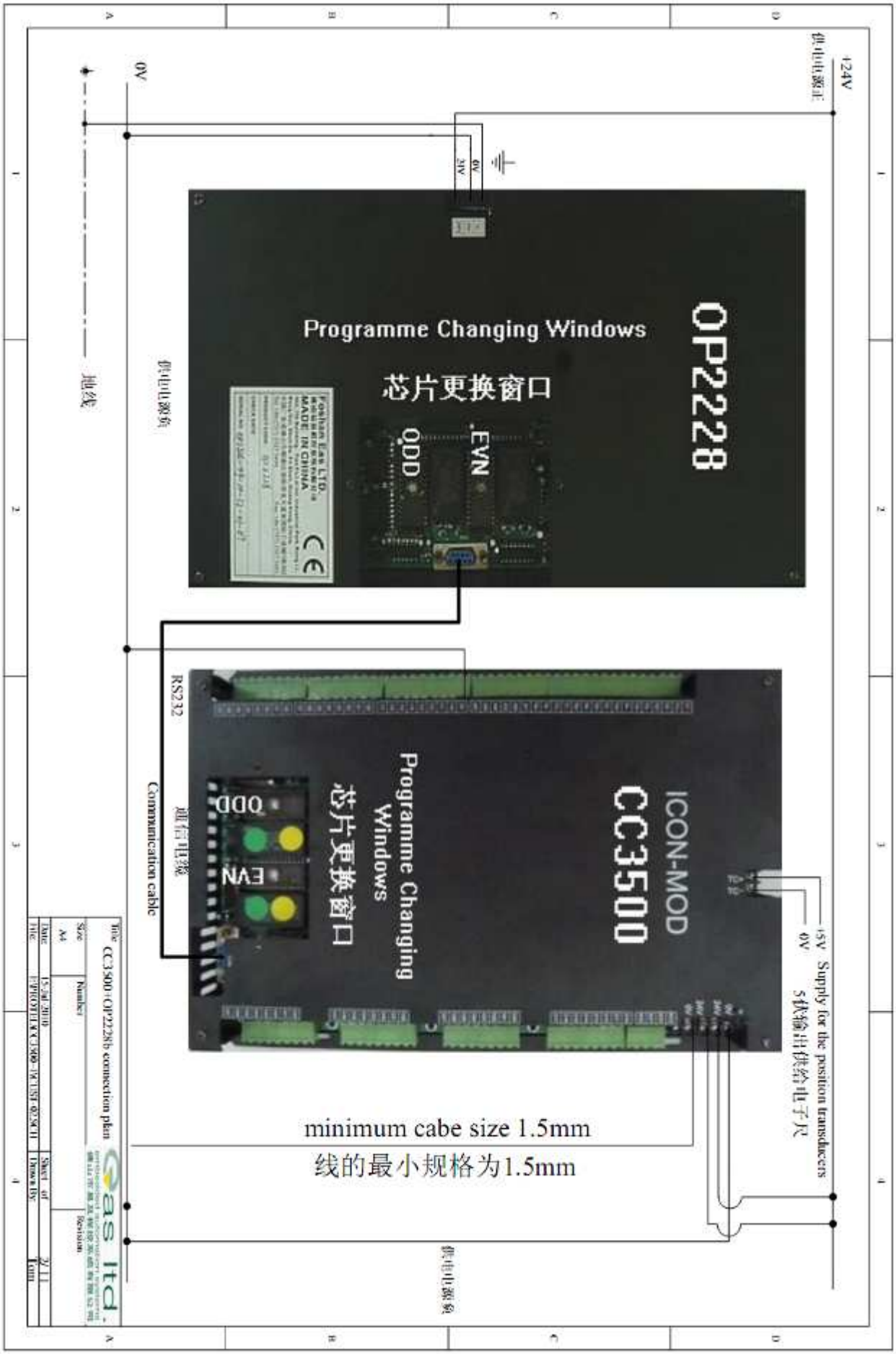
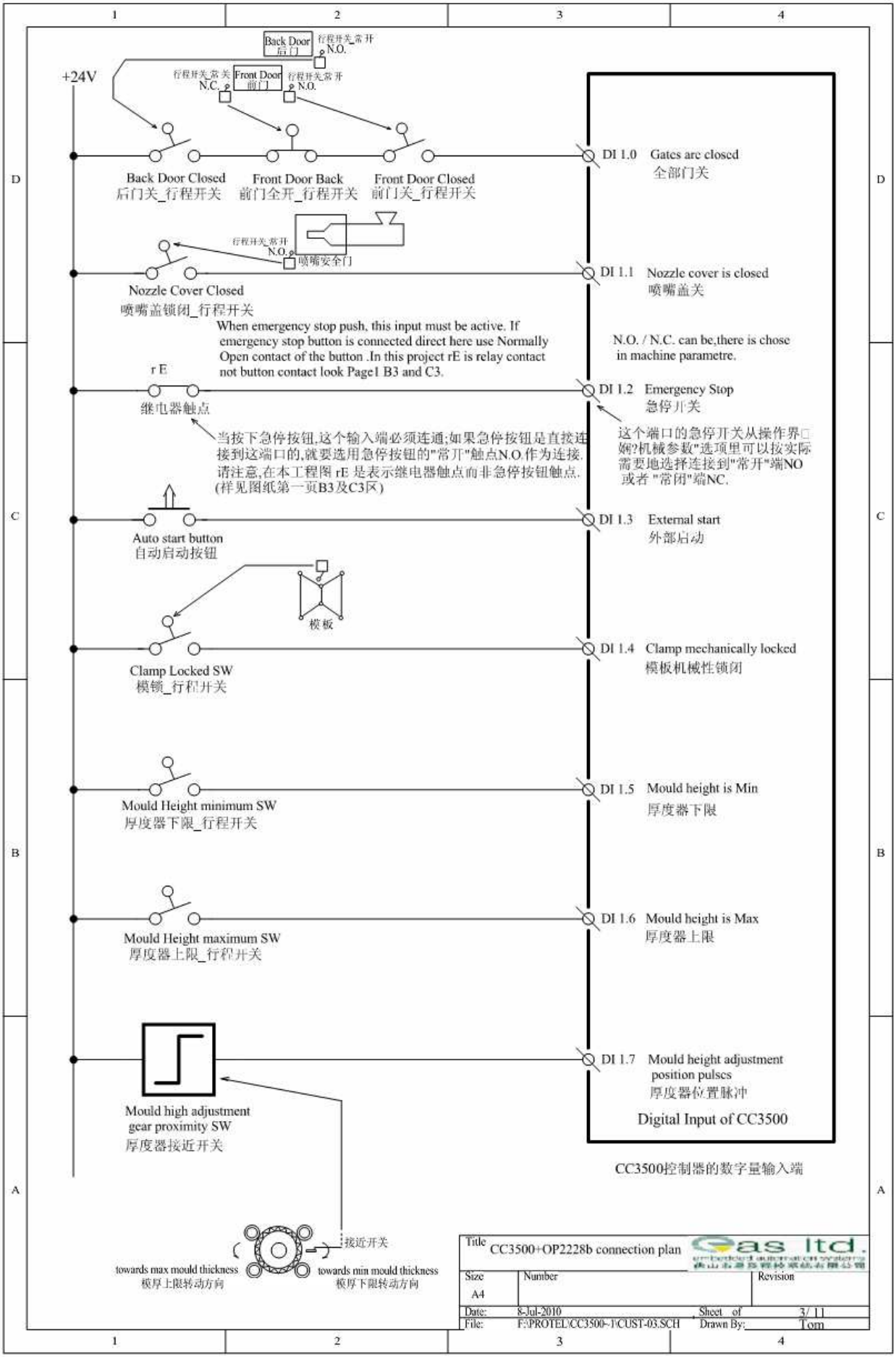
-Set feeding pressure P=0070 bar,feeding speed Q=100
-Press feeding button,look screw turning speed till you reach max speed or till you see decreasing on the speed,adjust G2 and measure valve 2 voltage and write it down.

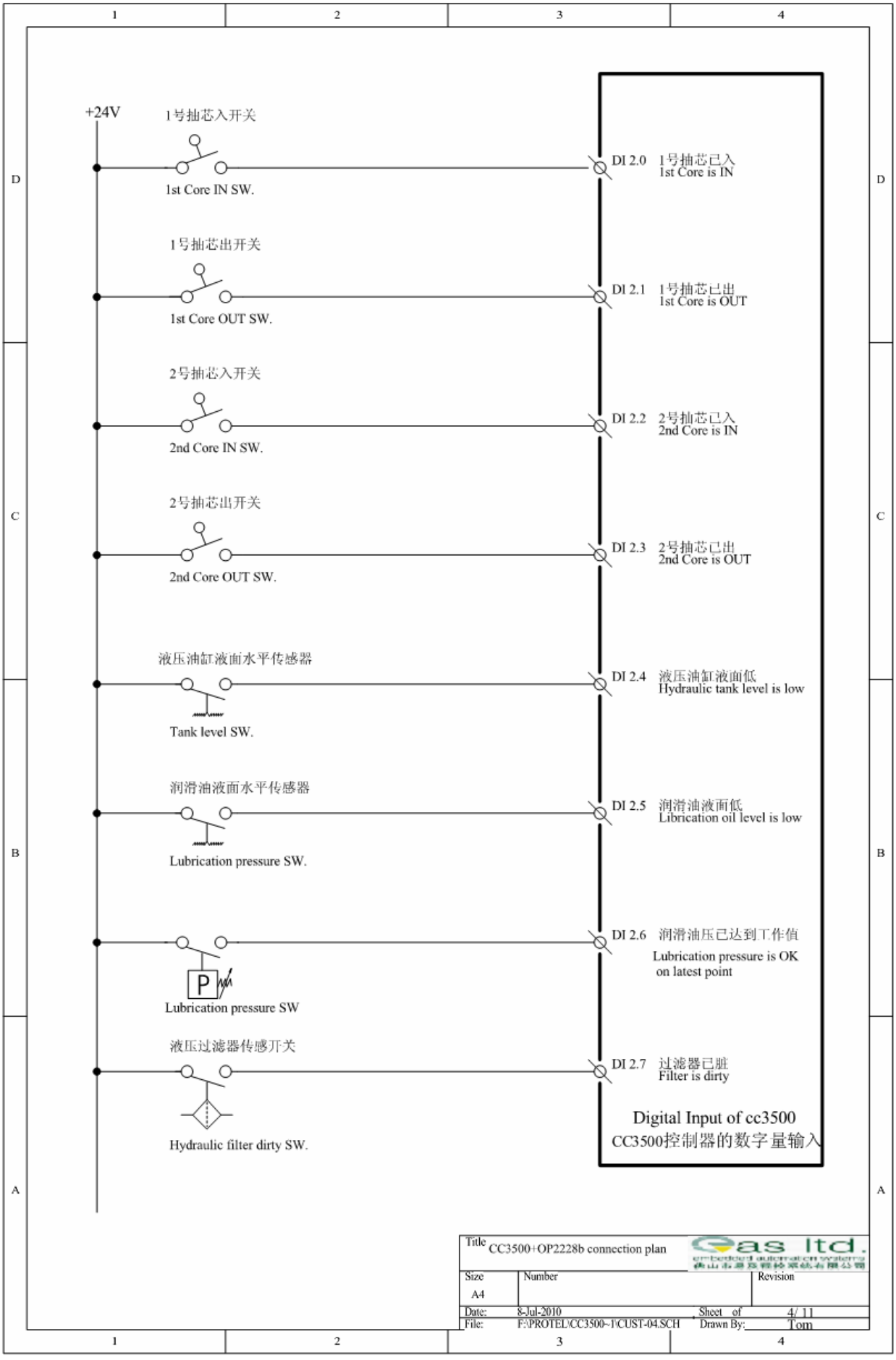
17.2.3 Inform us after adjustment what is
P=0 bar valve1 voltage
P=max valve1 voltage
Q=%5 valve2 voltage
Q=%100 valve2 voltagek

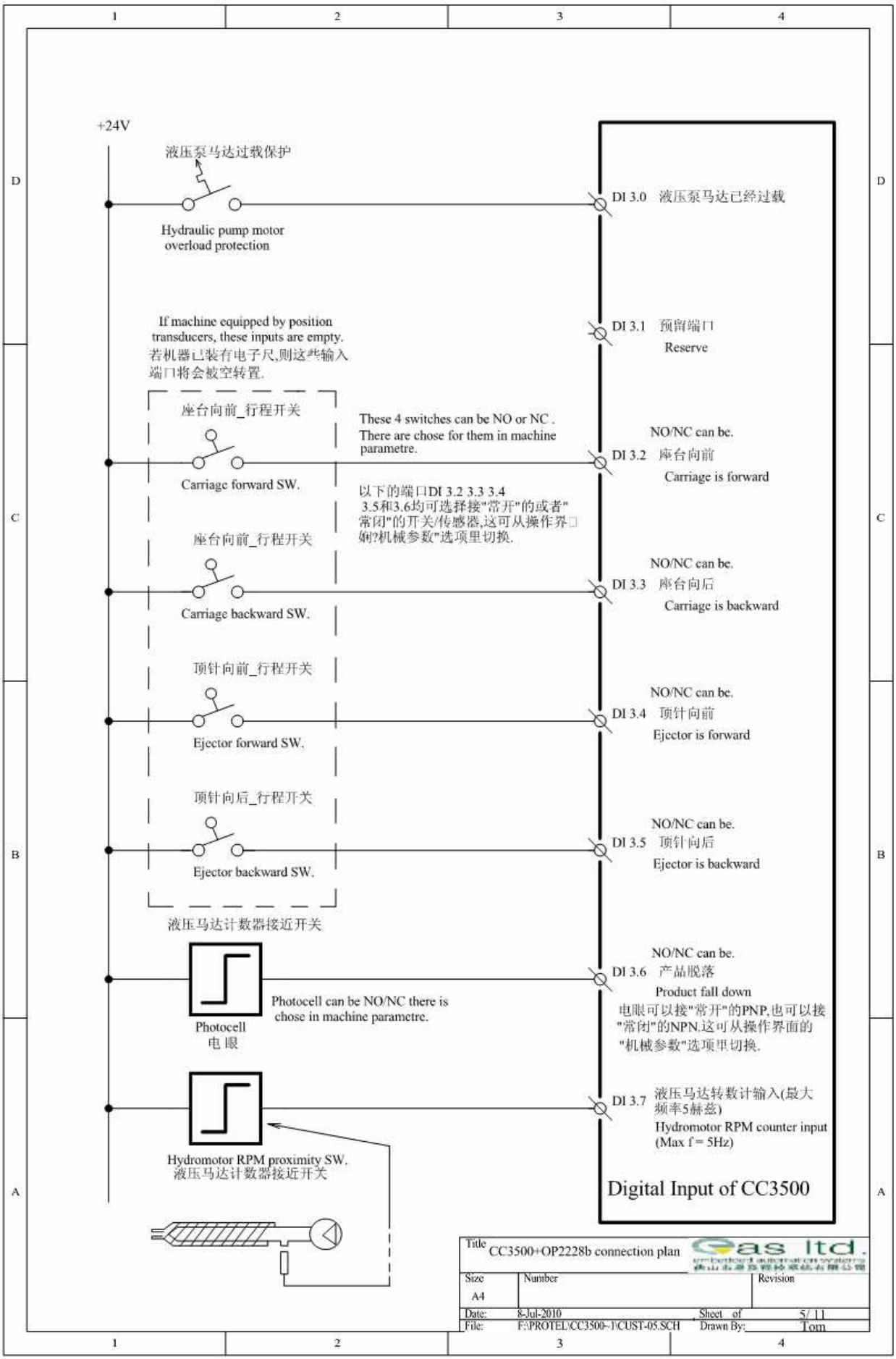
18.CC3500+OP2228 CONNECTION PLAN

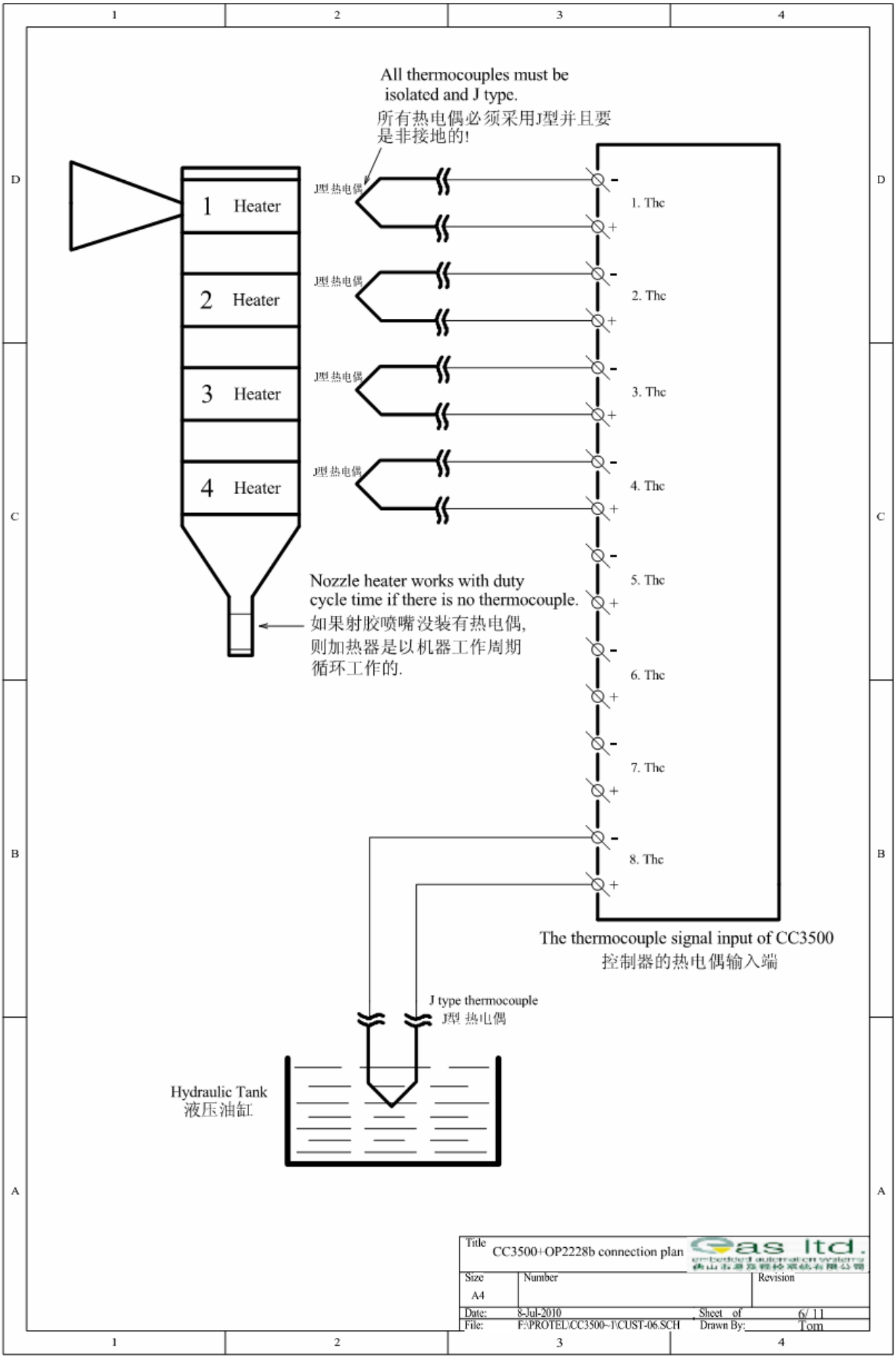


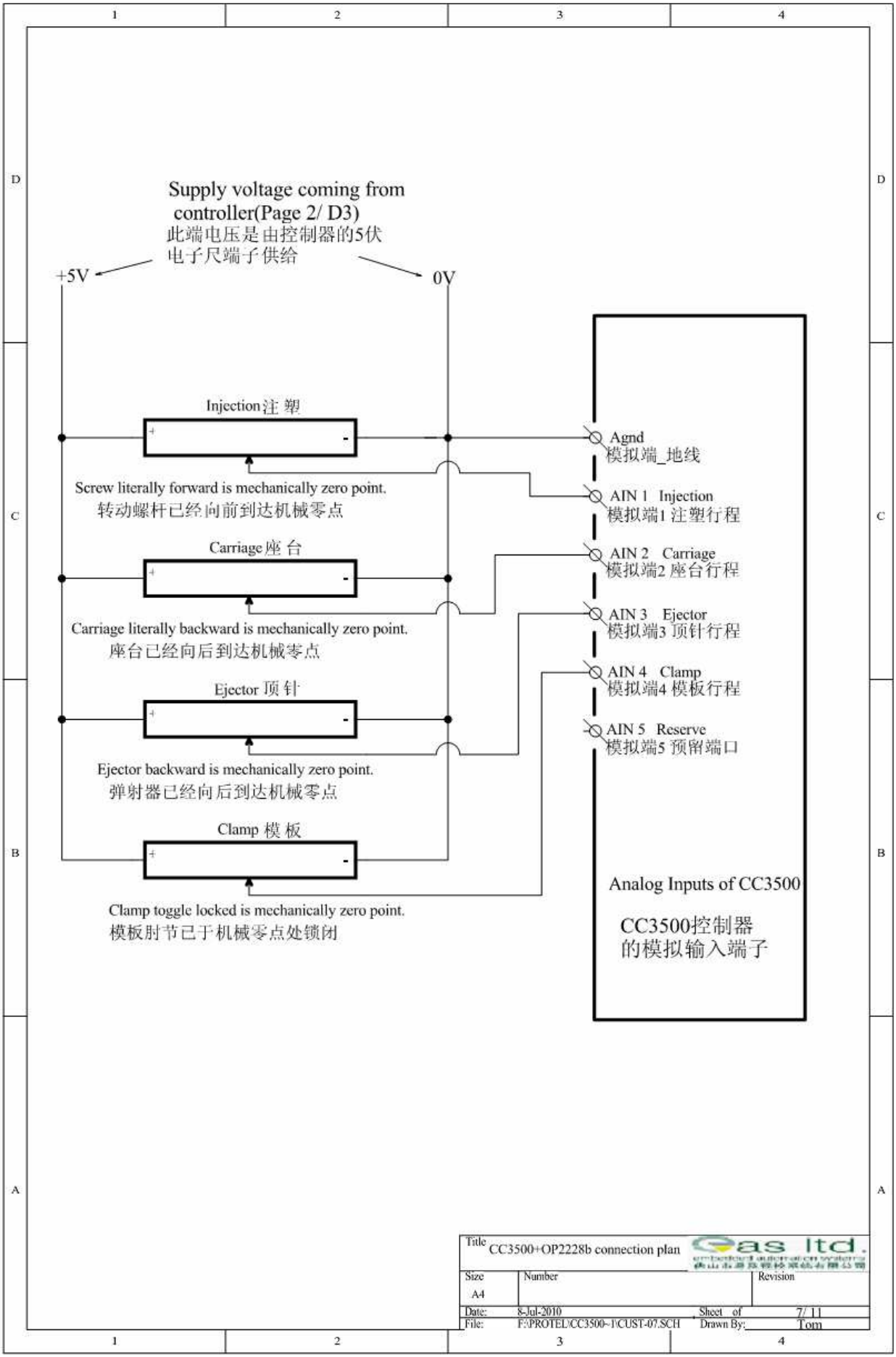

+24V
供电电源正
0V
地线
供电电源负
Programme Changing Windows
芯片更换窗口
OP2228
EVN
ODD
RS232
通信电缆
Communication cable
ICON-MOD
CC3500
Programme Changing Windows
芯片更换窗口
ODD
EVN
+5V Supply for the position transducers
0V
5伏输出供给电子尺
minimum cabe size 1.5mm
线的最小规格为1.5mm
CC3500+OP2228b connection plan
Qas ltd.

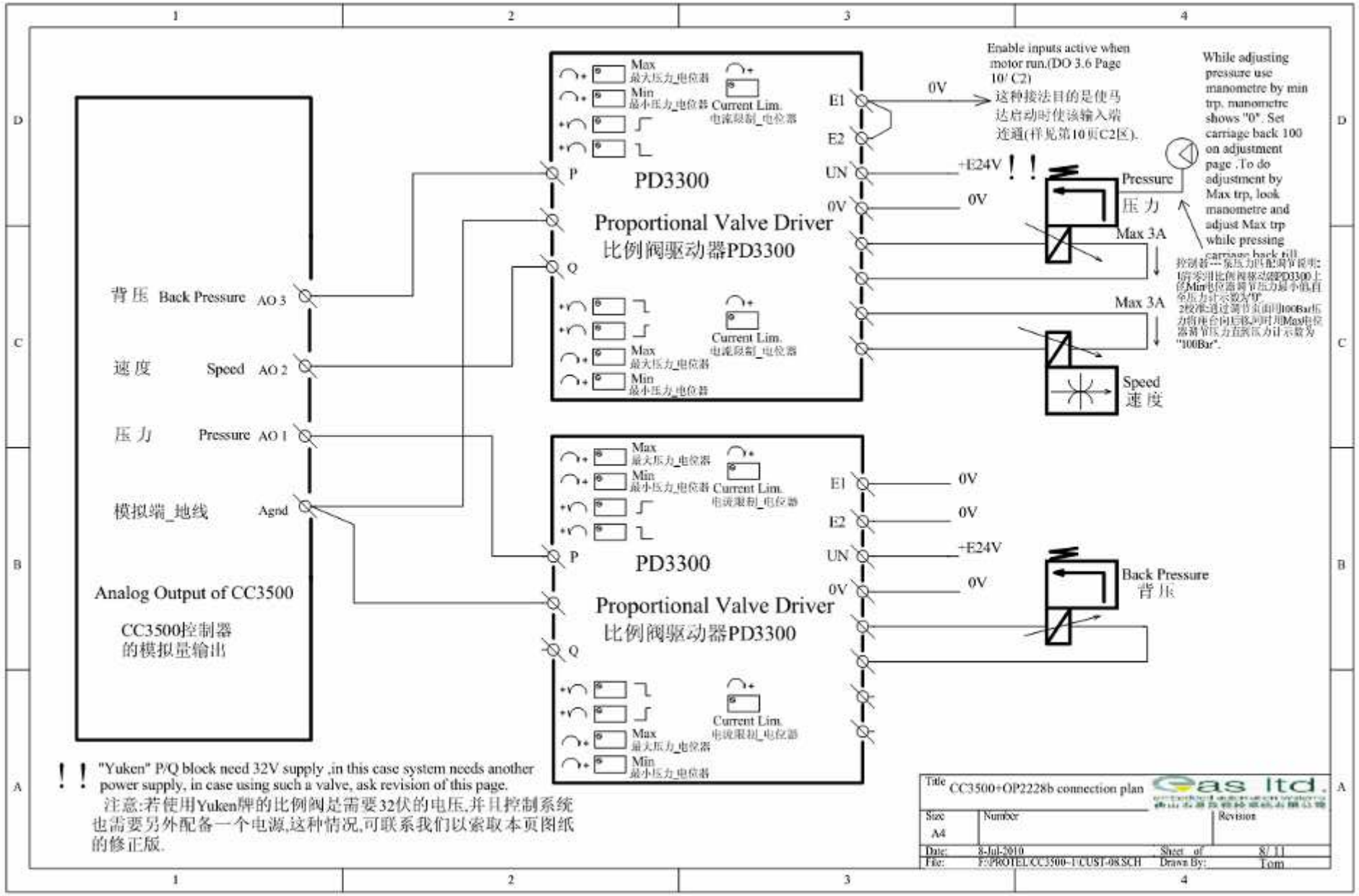

Back Door 后门 行程开关_常开 N.O.
+24V
行程开关_常关 N.C.
Front Door 前门
行程开关_常开 N.O.
Back Door Closed 后门关_行程开关
Front Door Back 前门全开_行程开关
Front Door Closed 前门关_行程开关
DI 1.0 Gates are closed 全部门关
行程开关_常开 N.O.
喷嘴安全门
Nozzle Cover Closed 喷嘴盖锁闭_行程开关
DI 1.1 Nozzle cover is closed 喷嘴盖关
When emergency stop push, this input must be active. If emergency stop button is connected direct here use Normally Open contact of the button .In this project rE is relay contact not button contact look Page1 B3 and C3.
N.O. / N.C. can be,there is chose in machine parametre.
rE
继电器触点
DI 1.2 Emergency Stop 急停开关
当按下急停按钮,这个输入端必须连通;如果急停按钮是直接连接到这端口的,就要选用急停按钮的"常开"触点N.O.作为连接.请注意,在本工程图 rE 是表示继电器触点而非急停按钮触点.(祥见图纸第一页B3及C3区)
这个端口的急停开关从操作界□娲?机械参数"选项里可以按实际需要地选择连接到"常开"端NO或者 "常闭"端NC.
Auto start button 自动启动按钮
DI 1.3 External start 外部启动
模板
Clamp Locked SW 模锁_行程开关
DI 1.4 Clamp mechanically locked 模板机械性锁闭
Mould Height minimum SW 厚度器下限_行程开关
DI 1.5 Mould height is Min 厚度器下限
Mould Height maximum SW 厚度器上限_行程开关
DI 1.6 Mould height is Max 厚度器上限
Mould high adjustment gear proximity SW 厚度器接近开关
DI 1.7 Mould height adjustment position pulses 厚度器位置脉冲
Digital Input of CC3500
CC3500控制器的数字量输入端
接近开关
towards max mould thickness 模厚上限转动方向
towards min mould thickness 模厚下限转动方向
Title CC3500+OP2228b connection plan
Size A4
Number
Revision
Date: 8-Jul-2010
Sheet of 3/11
File: F:\PROTEL\CC3500-T\CUST-03.SCH
Drawn By: Tom

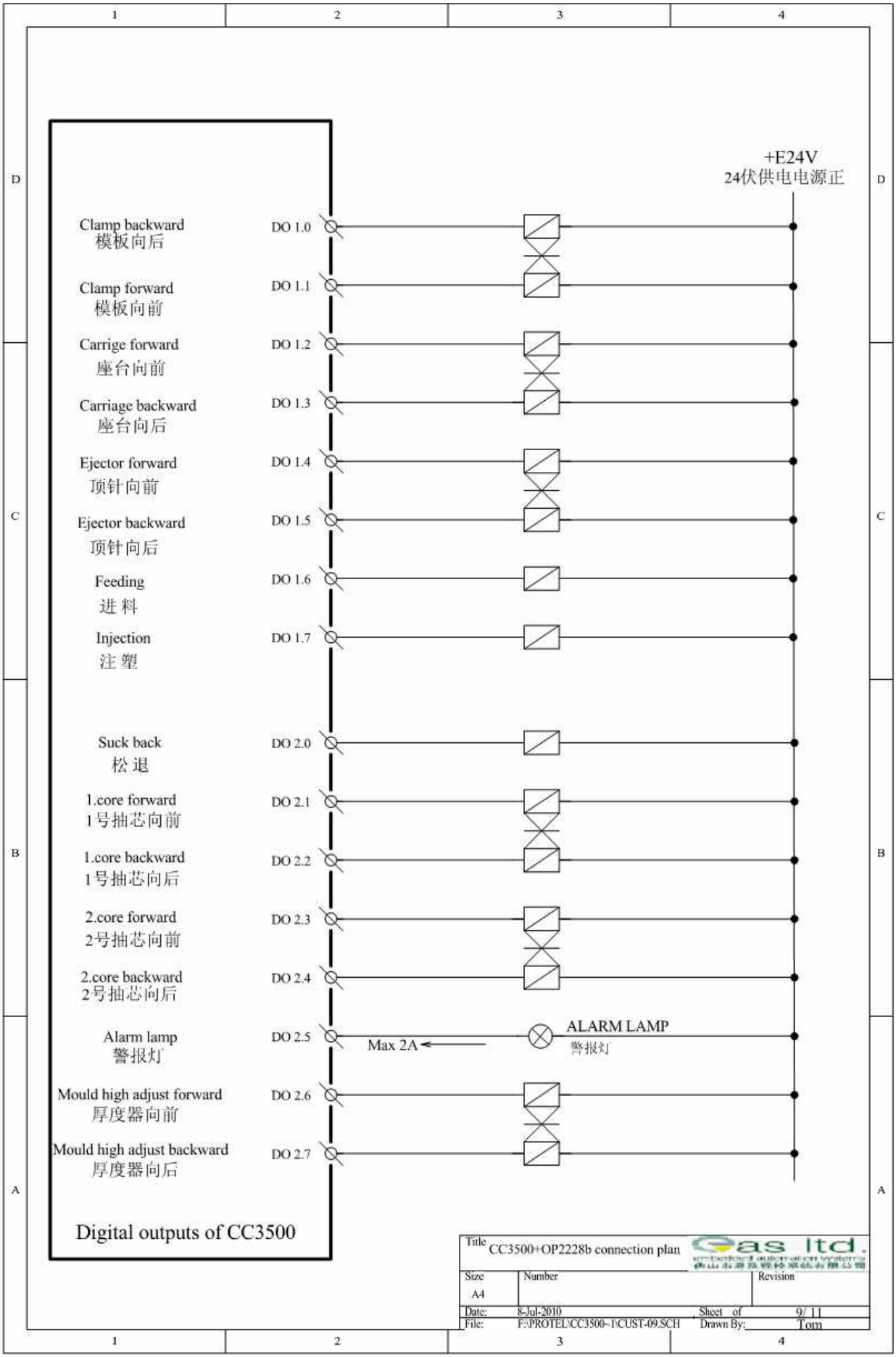

+24V
1号抽芯入开关
1st Core IN SW.
DI 2.0 1号抽芯已入
1st Core is IN
1号抽芯出开关
1st Core OUT SW.
DI 2.1 1号抽芯已出
1st Core is OUT
2号抽芯入开关
2nd Core IN SW.
DI 2.2 2号抽芯已入
2nd Core is IN
2号抽芯出开关
2nd Core OUT SW.
DI 2.3 2号抽芯已出
2nd Core is OUT
液压油缸液面水平传感器
Tank level SW.
DI 2.4 液压油缸液面低
Hydraulic tank level is low
润滑油液面水平传感器
Lubrication pressure SW.
DI 2.5 润滑油液面低
Lubrication oil level is low
P
Lubrication pressure SW
DI 2.6 润滑油压已达到工作值
Lubrication pressure is OK
on latest point
液压过滤器传感开关
Hydraulic filter dirty SW.
DI 2.7 过滤器已脏
Filter is dirty
Digital Input of cc3500
CC3500控制器的数字量输入
Title CC3500+OP2228b connection plan
Size A4
Number
Revision
Date: 8-Jul-2010
Sheet of 4/ 11
File: F:\PROTEL\CC3500-T\CUST-04.SCH
Drawn By: Tom

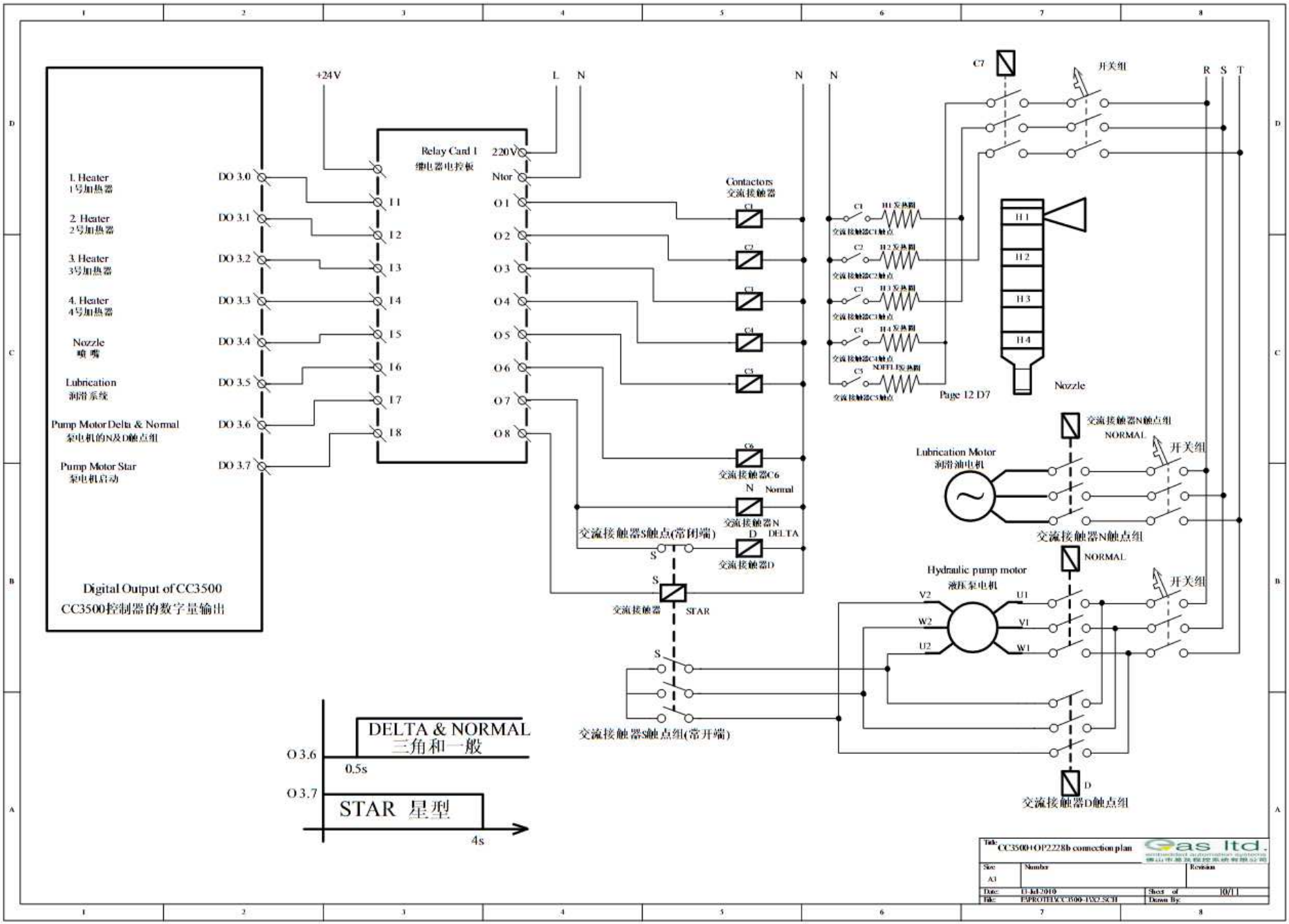

+24V
液压泵马达过载保护
Hydraulic pump motor overload protection
DI 3.0 液压泵马达已经过载
If machine equipped by position transducers, these inputs are empty.
若机器已装有电子尺,则这些输入端口将会被空转置.
DI 3.1 预留端口
Reserve
座台向前_行程开关
Carriage forward SW.
These 4 switches can be NO or NC . There are chose for them in machine parametre.
以下的端口DI 3.2 3.3 3.4 3.5和3.6均可选择接"常开"的或者"常闭"的开关/传感器,这可从操作界面的"机械参数"选项里切换.
NO/NC can be.
DI 3.2 座台向前
Carriage is forward
座台向前_行程开关
Carriage backward SW.
NO/NC can be.
DI 3.3 座台向后
Carriage is backward
顶针向前_行程开关
Ejector forward SW.
NO/NC can be.
DI 3.4 顶针向前
Ejector is forward
顶针向后_行程开关
Ejector backward SW.
NO/NC can be.
DI 3.5 顶针向后
Ejector is backward
液压马达计数器接近开关
Photocell
电眼
Photocell can be NO/NC there is chose in machine parametre.
NO/NC can be.
DI 3.6 产品脱落
Product fall down
电眼可以接"常开"的PNP,也可以接"常闭"的NPN.这可从操作界面的"机械参数"选项里切换.
Hydromotor RPM proximity SW.
液压马达计数器接近开关
DI 3.7 液压马达转数计输入(最大频率5赫兹)
Hydromotor RPM counter input (Max f = 5Hz)
Digital Input of CC3500
Title CC3500+OP2228b connection plan
Size A4
Number
Revision
Date: 8-Jul-2010
Sheet of 5/ 11
File: F:\PROTEL\CC3500-T\CUST-05.SCH
Drawn By: Tom

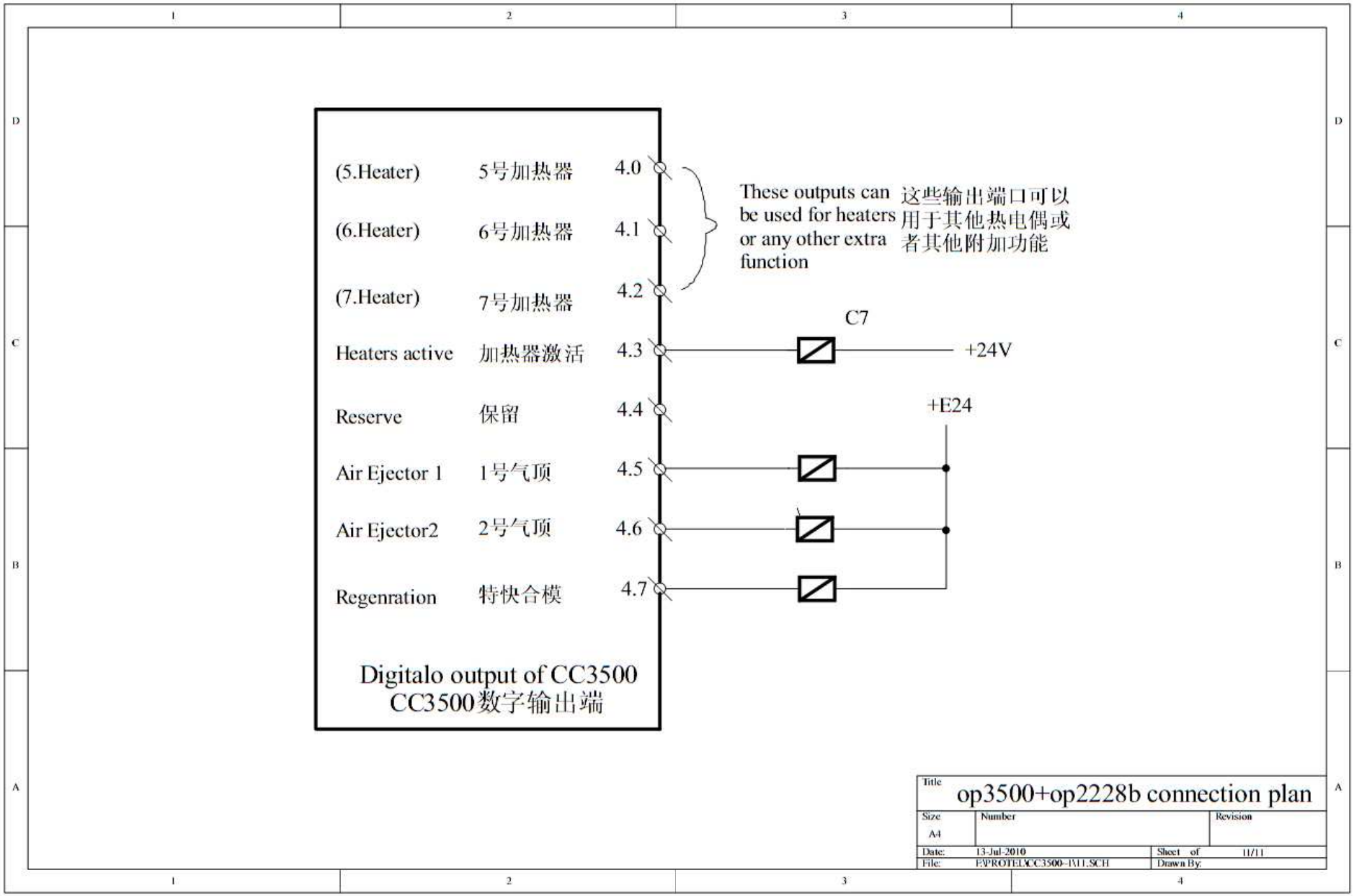

All thermocouples must be isolated and J type.
所有热电偶必须采用J型并且要是非接地的!
1 Heater
2 Heater
3 Heater
4 Heater
J型热电偶
J型热电偶
J型热电偶
J型热电偶
1. Thc
2. Thc
3. Thc
4. Thc
5. Thc
6. Thc
7. Thc
8. Thc
Nozzle heater works with duty cycle time if there is no thermocouple.
如果射胶喷嘴没装有热电偶,则加热器是以机器工作周期循环工作的.
The thermocouple signal input of CC3500
控制器的热电偶输入端
J type thermocouple
J型 热电偶
Hydraulic Tank
液压油缸
Title CC3500+OP2228b connection plan
Size A4
Number
Revision
Date: 8-Jul-2010
Sheet of 6/ 11
File: F:\PROTEL\CC3500~1\CUST-06.SCH
Drawn By: Tom


Supply voltage coming from controller(Page 2/ D3)
此端电压是由控制器的5伏电子尺端子供给
+5V
0V
Injection注 塑
Screw literally forward is mechanically zero point.
转动螺杆已经向前到达机械零点
Carriage座 台
Carriage literally backward is mechanically zero point.
座台已经向后到达机械零点
Ejector 顶针
Ejector backward is mechanically zero point.
弹射器已经向后到达机械零点
Clamp 模 板
Clamp toggle locked is mechanically zero point.
模板肘节已于机械零点处锁闭
Agnd
模拟端_地线
AIN 1 Injection
模拟端1 注塑行程
AIN 2 Carriage
模拟端2 座台行程
AIN 3 Ejector
模拟端3 顶针行程
AIN 4 Clamp
模拟端4 模板行程
AIN 5 Reserve
模拟端5 预留端口
Analog Inputs of CC3500
CC3500控制器
的模拟输入端子
Title CC3500+OP2228b connection plan
Size A4
Number
Revision
Date: 8-Jul-2010
Sheet of 7/ 11
File: F:\PROTEL\CC3500~1\CUST-07.SCH
Drawn By: Tom

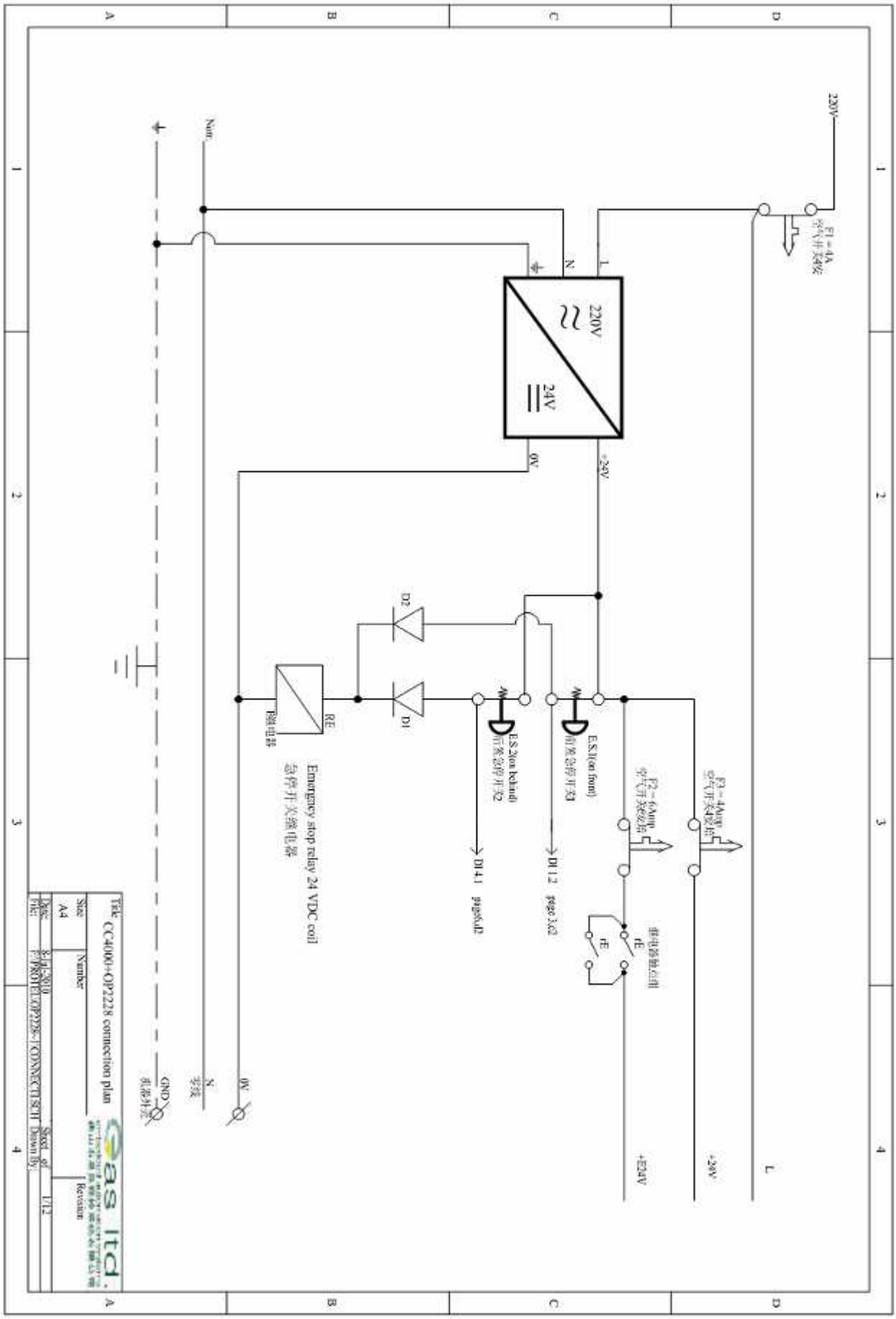

Enable inputs active when motor run.(DO 3.6 Page 10/ C2)
这种接法目的是使马达启动时使该输入端连通(详见第10页C2区).
While adjusting pressure use manometre by min trp, manometre shows "0". Set carriage back 100 on adjustment page .To do adjustment by Max trp, look manometre and adjust Max trp while pressing carriage back 键.
控制器---泵压力P/Q配调节说明:
1)将零泄比例阀驱动器PD3300上的Min电位器调节压力最小值直至压力计示数为"0".
2)校准:通过调节主面用100Bar压力将电台向后移动时用Max电位器调节压力直到压力计示数为"100Bar".
Max 最大压力_电位器
Min 最小压力_电位器
Current Lim. 电流限制_电位器
P
Q
E1
E2
UN
0V
PD3300
Proportional Valve Driver
比例阀驱动器PD3300
+E24V
Pressure
压力
Max 3A
Speed
速度
Back Pressure
背压
背压 Back Pressure AO 3
速度 Speed AO 2
压力 Pressure AO 1
模拟端_地线 Agnd
Analog Output of CC3500
CC3500控制器的模拟量输出
"Yuken" P/Q block need 32V supply ,in this case system needs another power supply, in case using such a valve, ask revision of this page.
注意:若使用Yuken牌的比例阀是需要32伏的电压,并且控制系统也需要另外配备一个电源,这种情况,可联系我们以索取本页图纸的修正版.
Title CC3500+OP2228b connection plan
Size A4
Number
Revision
Date: 8-Jul-2010
Sheet of 8/ 11
File: F:\PROTEL\CC3500-1\CUST-08.SCH
Drawn By: Tom

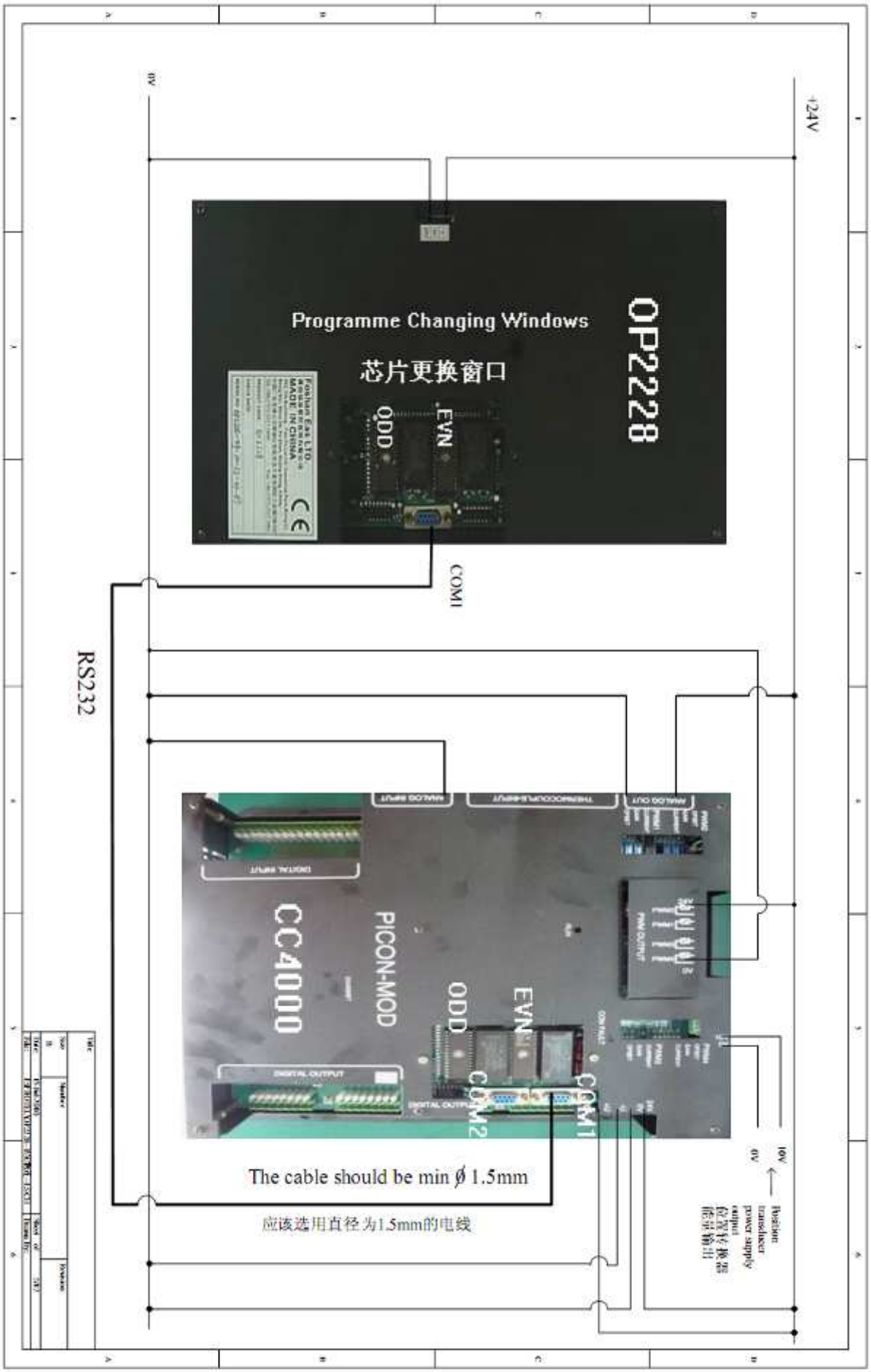

+E24V
24伏供电电源正
Clamp backward
模板向后
DO 1.0
Clamp forward
模板向前
DO 1.1
Carrige forward
座台向前
DO 1.2
Carriage backward
座台向后
DO 1.3
Ejector forward
顶针向前
DO 1.4
Ejector backward
顶针向后
DO 1.5
Feeding
进料
DO 1.6
Injection
注塑
DO 1.7
Suck back
松退
DO 2.0
1.core forward
1号抽芯向前
DO 2.1
1.core backward
1号抽芯向后
DO 2.2
2.core forward
2号抽芯向前
DO 2.3
2.core backward
2号抽芯向后
DO 2.4
Alarm lamp
警报灯
DO 2.5
Max 2A
ALARM LAMP
警报灯
Mould high adjust forward
厚度器向前
DO 2.6
Mould high adjust backward
厚度器向后
DO 2.7
Digital outputs of CC3500
Title
CC3500+OP2228b connection plan
Size
A4
Number
Revision
Date: 8-Jul-2010
Sheet of 9/ 11
File: F:\PROTEL\CC3500~1\CUST-09.SCH
Drawn By: Tom

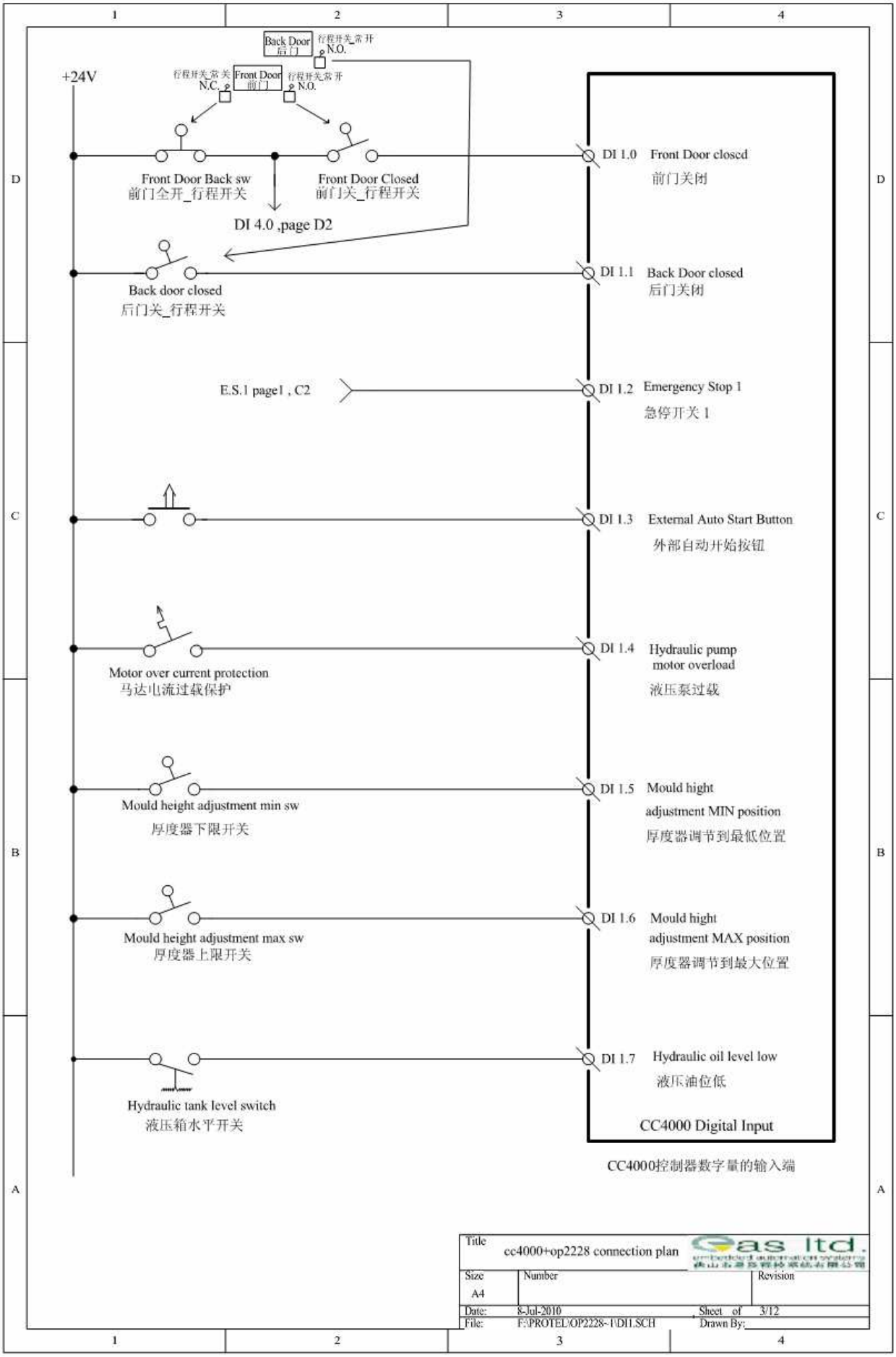

1. Heater
1号加热器
2. Heater
2号加热器
3. Heater
3号加热器
4. Heater
4号加热器
Nozzle
喷嘴
Lubrication
润滑系统
Pump Motor Delta & Normal
泵电机的N及D触点组
Pump Motor Star
泵电机启动
DO 3.0
DO 3.1
DO 3.2
DO 3.3
DO 3.4
DO 3.5
DO 3.6
DO 3.7
Digital Output of CC3500
CC3500控制器的数字量输出
+24V
Relay Card 1
继电器电控板
I1
I2
I3
I4
I5
I6
I7
I8
220V
Ntor
O1
O2
O3
O4
O5
O6
O7
O8
L
N
Contactors
交流接触器
C1
C2
C3
C4
C5
C6
交流接触器C6
N
Normal
交流接触器N
D
DELTA
交流接触器D
交流接触器S触点(常闭端)
S
交流接触器
STAR
交流接触器S触点组(常开端)
C7
开关组
R
S
T
H1
H2
H3
H4
Nozzle
Page 12 D7
交流接触器N触点组
NORMAL
Lubrication Motor
润滑油电机
交流接触器N触点组
Hydraulic pump motor
液压泵电机
V2
W2
U2
U1
V1
W1
D
交流接触器D触点组
O3.6
DELTA & NORMAL
三角和一般
0.5s
O3.7
STAR 星型
4s
CC3500+OP2228b connection plan
Gas ltd.
Size
A3
Number
Revision
Date:
13-Jul-2010
Sheet of
1[0/1]
File:
P:\PROTEUS\CC3500-TAX2.SCH
Drawn By:

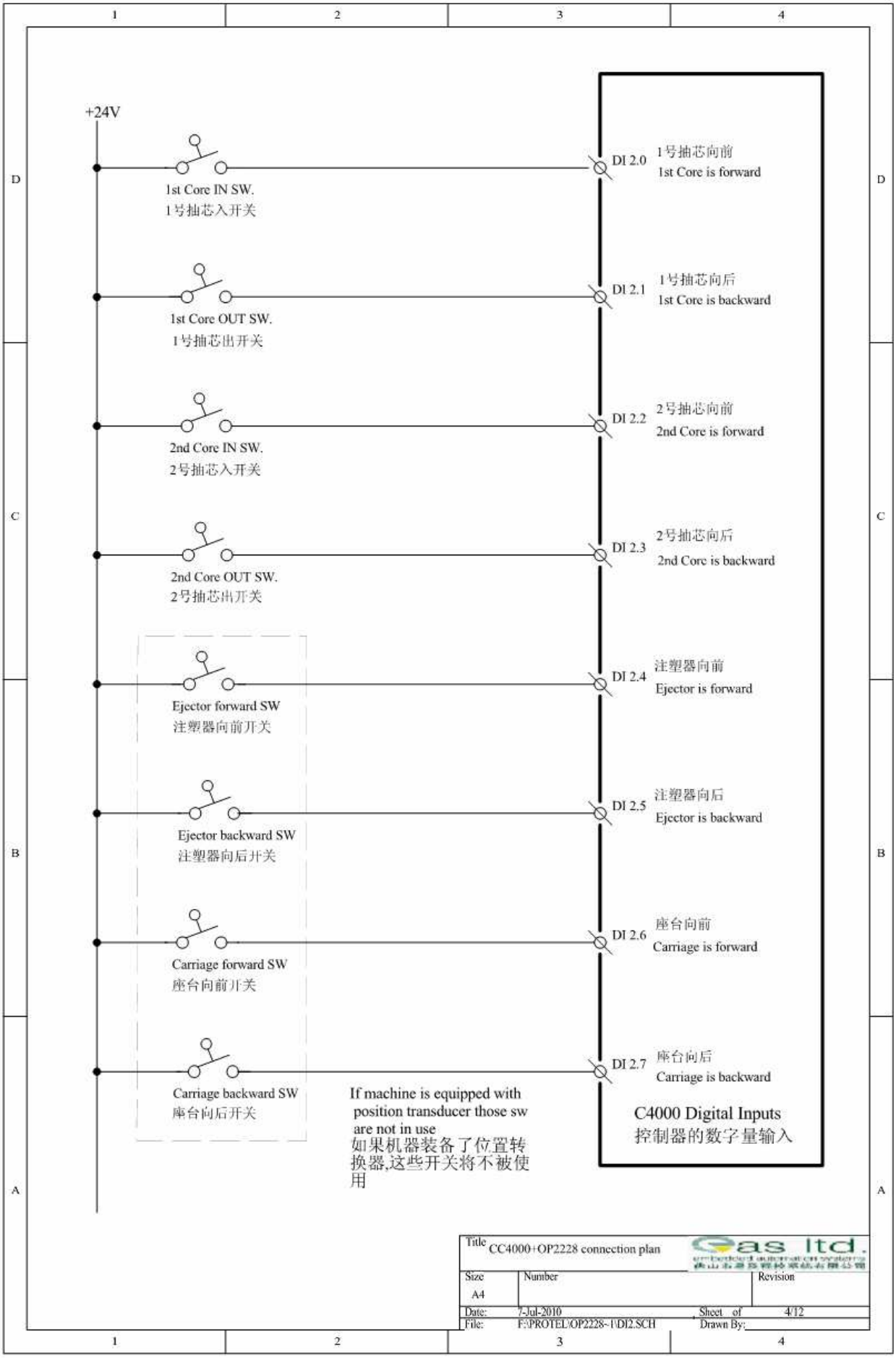

(5.Heater) 5号加热器 4.0
(6.Heater) 6号加热器 4.1
(7.Heater) 7号加热器 4.2
Heaters active 加热器激活 4.3
Reserve 保留 4.4
Air Ejector 1 1号气顶 4.5
Air Ejector2 2号气顶 4.6
Regenration 特快合模 4.7
These outputs can be used for heaters or any other extra function
这些输出端口可以用于其他热电偶或者其他附加功能
C7
+24V
+E24
Digitalo output of CC3500
CC3500数字输出端
Title
op3500+op2228b connection plan
Size
A4
Number
Revision
Date: 13-Jul-2010
Sheet of 11/11
File: E:\PROTEL\CC3500-IM11.SCH
Drawn By:

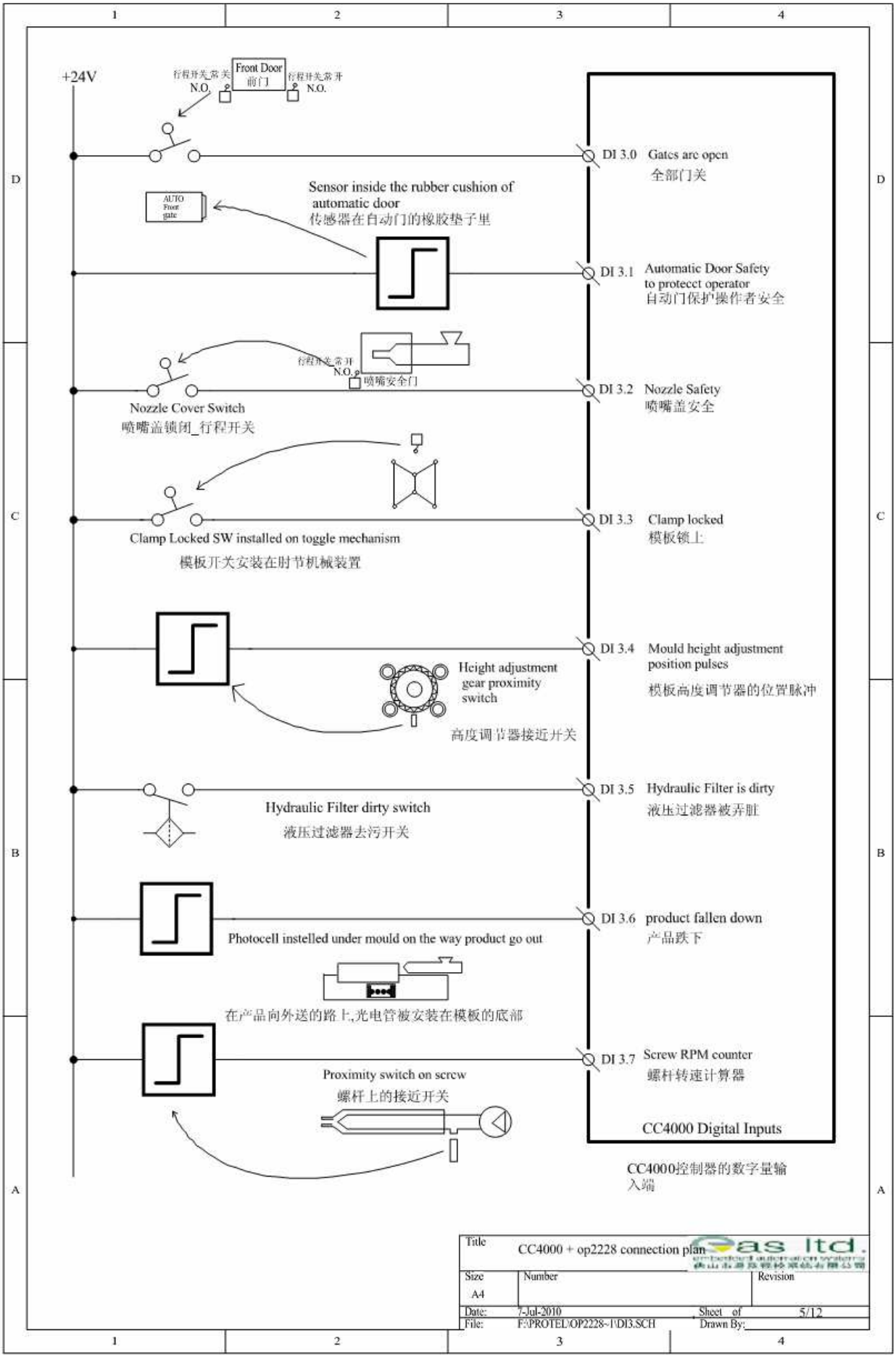
19.C4000+OP2228 ONNRCTION PLAN

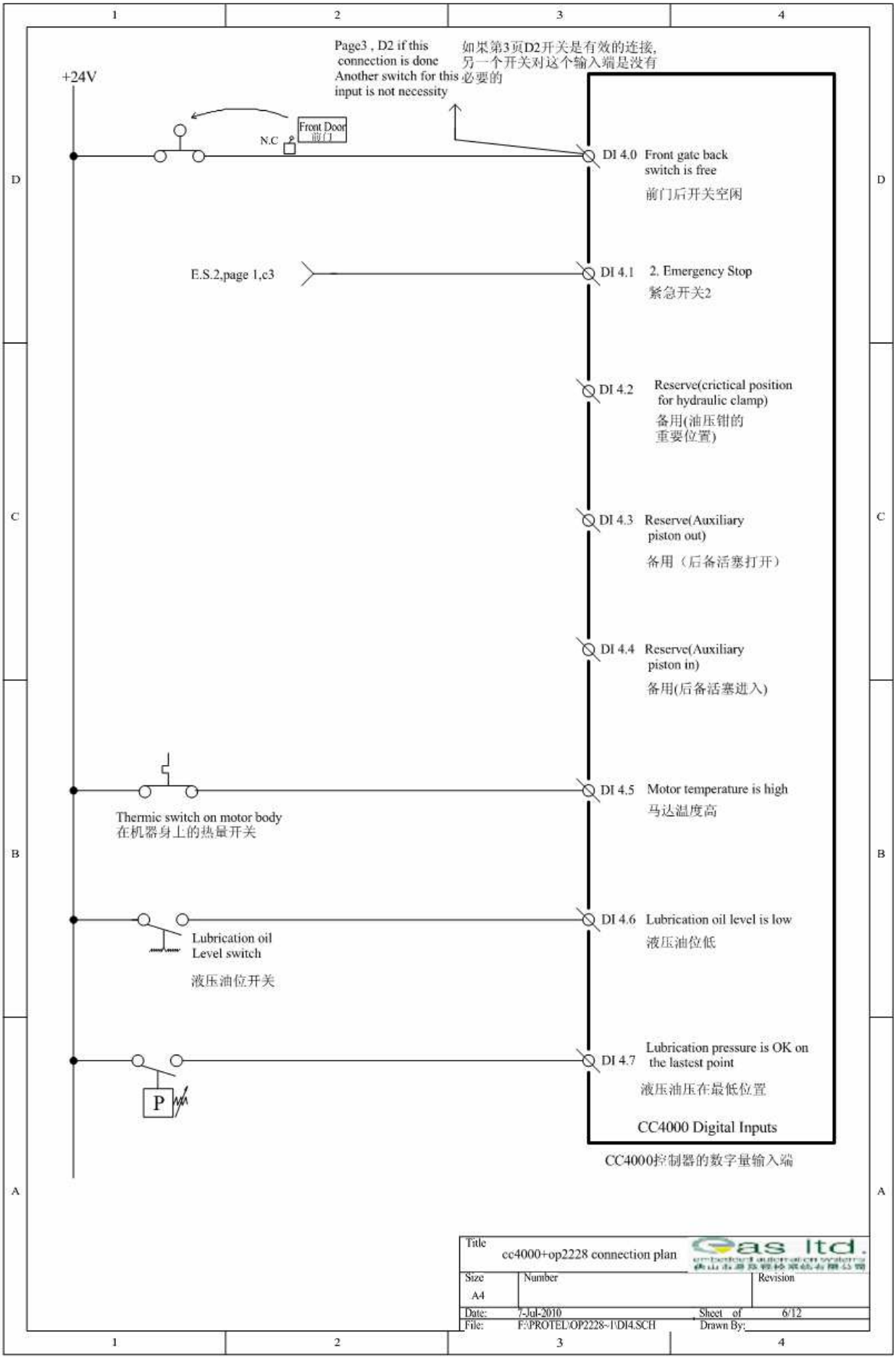


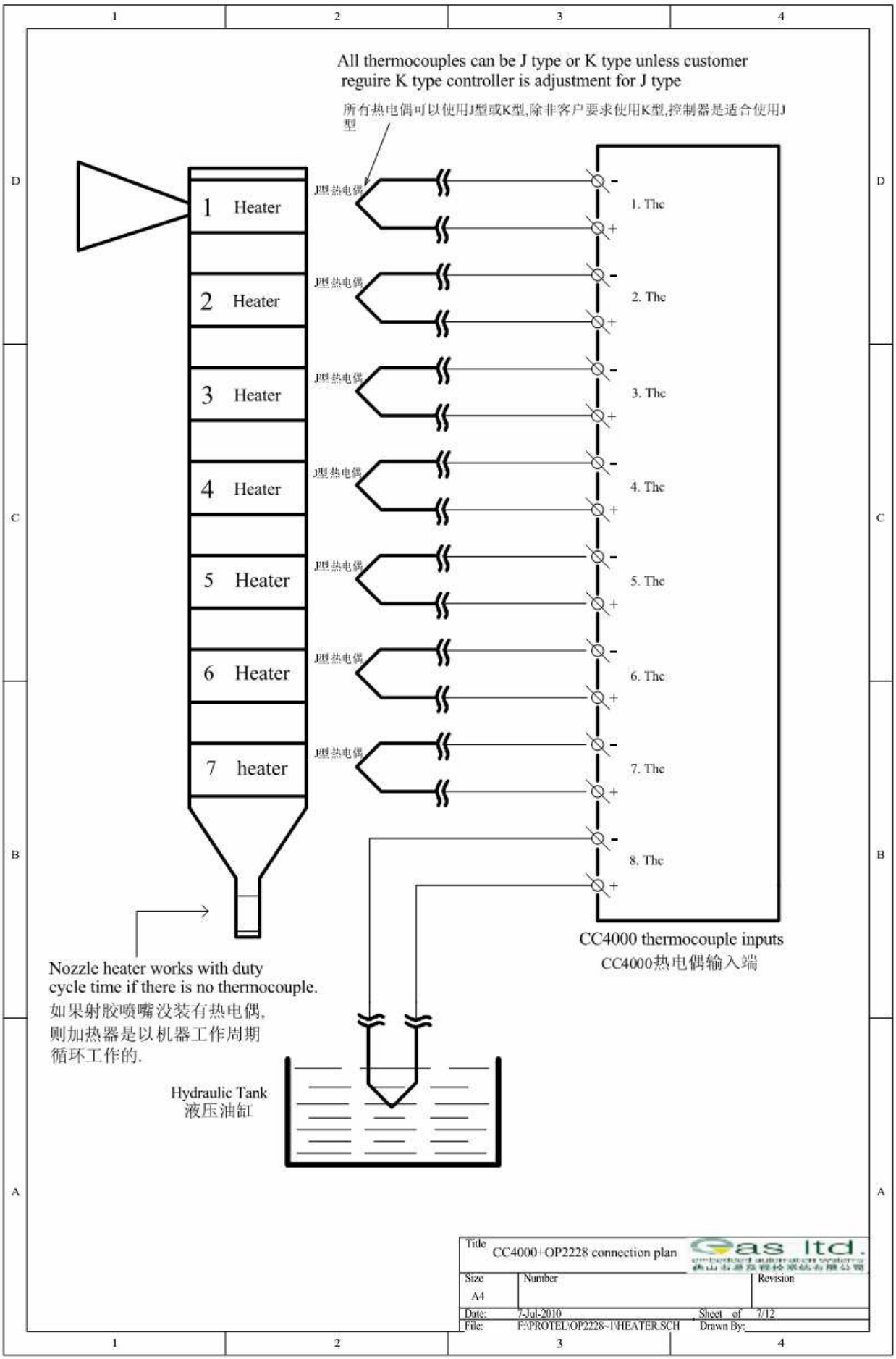

0V
+24V
Programme Changing Windows
芯片更换窗口
OP2228
ODD
EVN
COM1
RS232
PICON-MOD
CC4000
ODD
EVN
COM1
COM2
The cable should be min ϕ 1.5mm
应该选用直径为1.5mm的电线
10V
0V
Position transducer power supply output
位置传感器供电输出

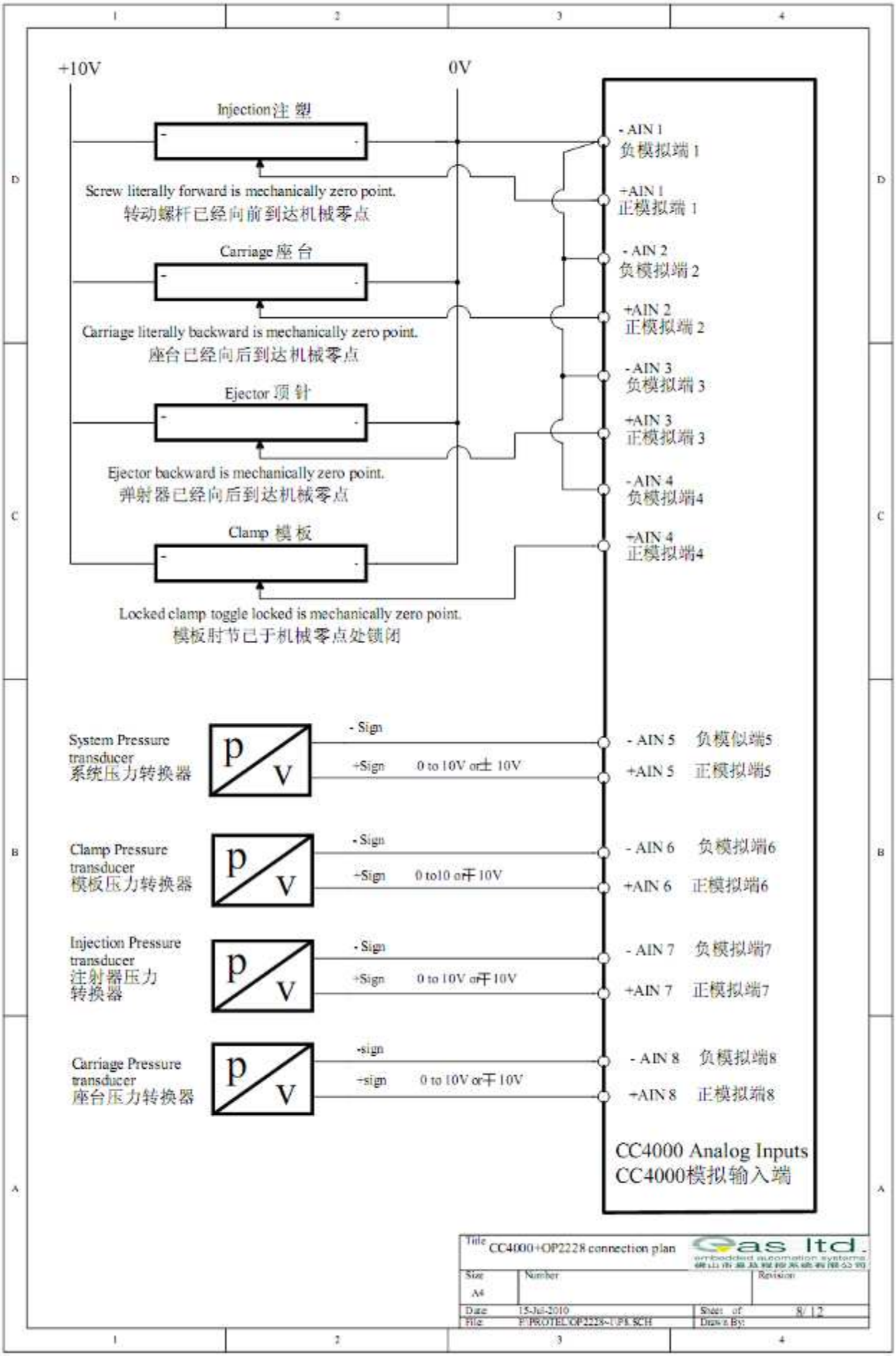

Back Door
后门
行程开关_常开
N.O.
+24V
行程开关_常关
N.C.
Front Door
前门
行程开关_常开
N.O.
Front Door Back sw
前门全开_行程开关
Front Door Closed
前门关_行程开关
DI 4.0 ,page D2
DI 1.0 Front Door closed
前门关闭
Back door closed
后门关_行程开关
DI 1.1 Back Door closed
后门关闭
E.S.1 page1 , C2
DI 1.2 Emergency Stop 1
急停开关 1
DI 1.3 External Auto Start Button
外部自动开始按钮
Motor over current protection
马达电流过载保护
DI 1.4 Hydraulic pump
motor overload
液压泵过载
Mould height adjustment min sw
厚度器下限开关
DI 1.5 Mould hight
adjustment MIN position
厚度器调节到最低位置
Mould height adjustment max sw
厚度器上限开关
DI 1.6 Mould hight
adjustment MAX position
厚度器调节到最大位置
Hydraulic tank level switch
液压箱水平开关
DI 1.7 Hydraulic oil level low
液压油位低
CC4000 Digital Input
CC4000控制器数字量的输入端
Title
cc4000+op2228 connection plan
Size
A4
Number
Revision
Date: 8-Jul-2010
Sheet of 3/12
File: F:\PROTEL\OP2228~1\DI1.SCH
Drawn By:


+24V
1st Core IN SW.
1号抽芯入开关
1st Core OUT SW.
1号抽芯出开关
2nd Core IN SW.
2号抽芯入开关
2nd Core OUT SW.
2号抽芯出开关
Ejector forward SW
注塑器向前开关
Ejector backward SW
注塑器向后开关
Carriage forward SW
座台向前开关
Carriage backward SW
座台向后开关
DI 2.0
1号抽芯向前
1st Core is forward
DI 2.1
1号抽芯向后
1st Core is backward
DI 2.2
2号抽芯向前
2nd Core is forward
DI 2.3
2号抽芯向后
2nd Core is backward
DI 2.4
注塑器向前
Ejector is forward
DI 2.5
注塑器向后
Ejector is backward
DI 2.6
座台向前
Carriage is forward
DI 2.7
座台向后
Carriage is backward
C4000 Digital Inputs
控制器的数字量输入
If machine is equipped with position transducer those sw are not in use
如果机器装备了位置转换器,这些开关将不被使用
Title CC4000+OP2228 connection plan
Size A4
Number
Revision
Date: 7-Jul-2010
Sheet of 4/12
File: F:\PROTEL\OP2228~1\DI2.SCH
Drawn By:

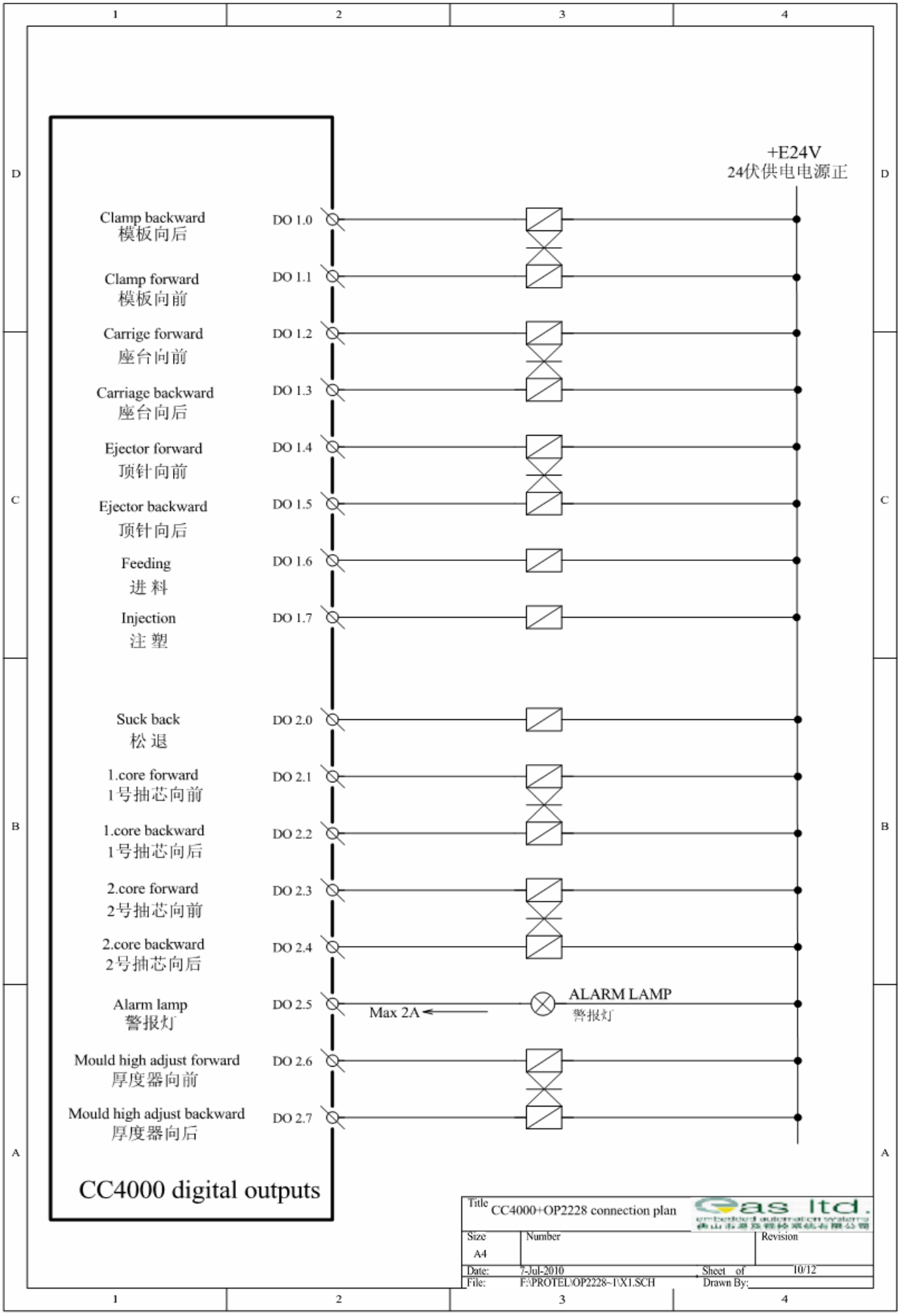

+24V
行程开关_常关
N.O.
Front Door
前门
行程开关_常开
N.O.
DI 3.0 Gates are open
全部门关
AUTO
Front
gate
Sensor inside the rubber cushion of
automatic door
传感器在自动门的橡胶垫子里
DI 3.1 Automatic Door Safety
to protect operator
自动门保护操作者安全
行程开关_常开
N.O.
喷嘴安全门
DI 3.2 Nozzle Safety
喷嘴盖安全
Nozzle Cover Switch
喷嘴盖锁闭_行程开关
DI 3.3 Clamp locked
模板锁上
Clamp Locked SW installed on toggle mechanism
模板开关安装在肘节机械装置
DI 3.4 Mould height adjustment
position pulses
模板高度调节器的位置脉冲
Height adjustment
gear proximity
switch
高度调节器接近开关
DI 3.5 Hydraulic Filter is dirty
液压过滤器被弄脏
Hydraulic Filter dirty switch
液压过滤器去污开关
DI 3.6 product fallen down
产品跌下
Photocell instelled under mould on the way product go out
在产品向外送的路上,光电管被安装在模板的底部
DI 3.7 Screw RPM counter
螺杆转速计算器
Proximity switch on screw
螺杆上的接近开关
CC4000 Digital Inputs
CC4000控制器的数字量输
入端
Title
CC4000 + op2228 connection plan
Size
A4
Number
Revision
Date: 7-Jul-2010
Sheet of 5/12
File: F:\PROTEL\OP2228~1\DI3.SCH
Drawn By:

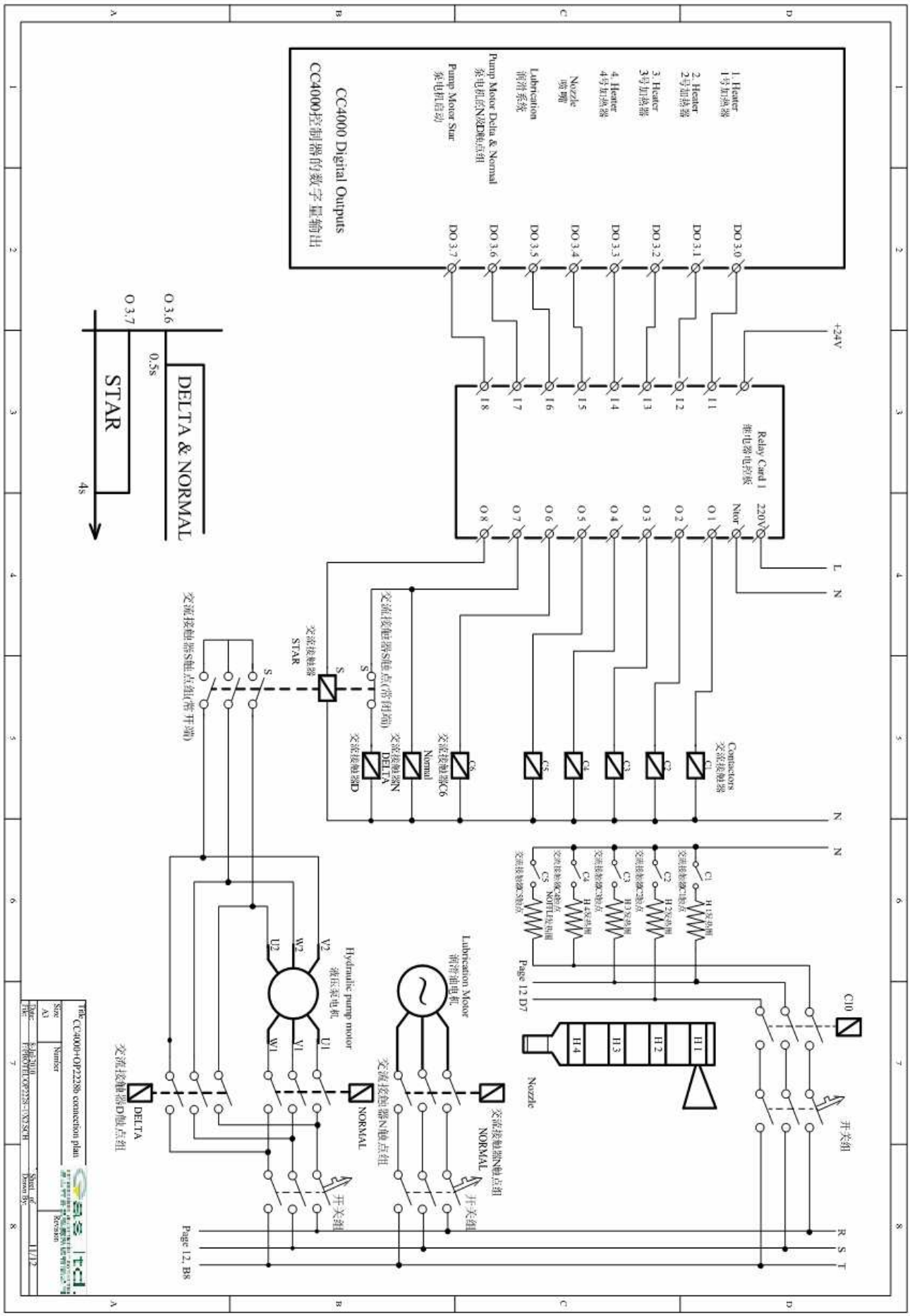

Page3 , D2 if this connection is done Another switch for this input is not necessity
如果第3页D2开关是有效的连接,另一个开关对这个输入端是没有必要的
+24V
Front Door 前门
N.C
DI 4.0 Front gate back switch is free
前门后开关空闲
E.S.2,page 1,c3
DI 4.1 2. Emergency Stop
紧急开关2
DI 4.2 Reserve(crictical position for hydraulic clamp)
备用(油压钳的重要位置)
DI 4.3 Reserve(Auxiliary piston out)
备用（后备活塞打开）
DI 4.4 Reserve(Auxiliary piston in)
备用(后备活塞进入)
Thermic switch on motor body
在机器身上的热量开关
DI 4.5 Motor temperature is high
马达温度高
Lubrication oil Level switch
液压油位开关
DI 4.6 Lubrication oil level is low
液压油位低
P
DI 4.7 Lubrication pressure is OK on the lastest point
液压油压在最低位置
CC4000 Digital Inputs
CC4000控制器的数字量输入端
Title
cc4000+op2228 connection plan
Size
A4
Number
Revision
Date: 7-Jul-2010
Sheet of 6/12
File: F:\PROTEL\OP2228~1\DI4.SCH
Drawn By:

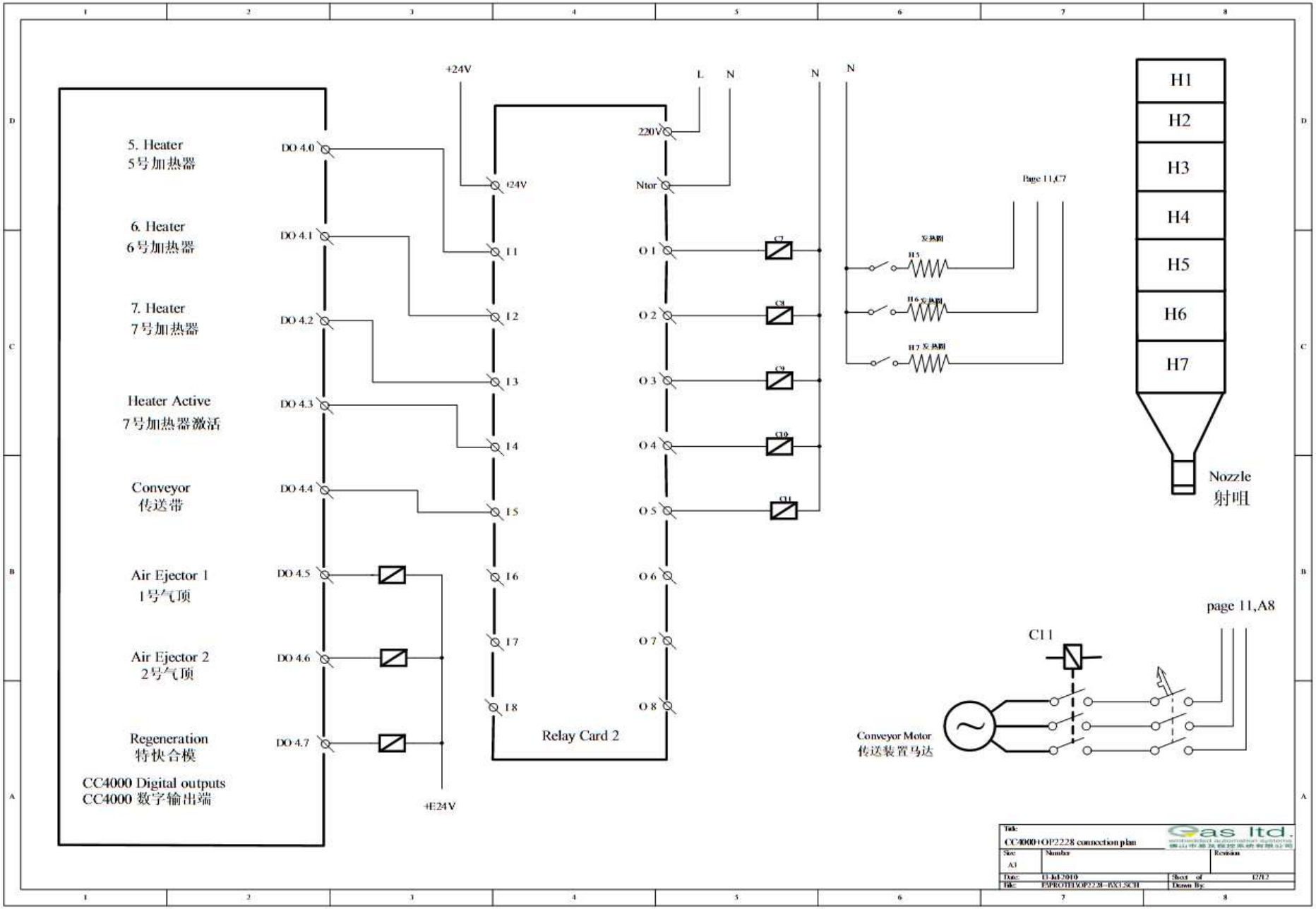

All thermocouples can be J type or K type unless customer reguire K type controller is adjustment for J type
所有热电偶可以使用J型或K型,除非客户要求使用K型,控制器是适合使用J型
1 Heater
2 Heater
3 Heater
4 Heater
5 Heater
6 Heater
7 heater
J型热电偶
1. Thc
2. Thc
3. Thc
4. Thc
5. Thc
6. Thc
7. Thc
8. Thc
CC4000 thermocouple inputs
CC4000热电偶输入端
Nozzle heater works with duty cycle time if there is no thermocouple.
如果射胶喷嘴没装有热电偶,则加热器是以机器工作周期循环工作的.
Hydraulic Tank
液压油缸
Title
CC4000+OP2228 connection plan
Size
A4
Number
Revision
Date: 7-Jul-2010
Sheet of 7/12
File: F:\PROTEL\OP2228~1\HEATER.SCH
Drawn By:


+10V
0V
Injection注 塑
Screw literally forward is mechanically zero point.
转动螺杆已经向前到达机械零点
Carriage座 台
Carriage literally backward is mechanically zero point.
座台已经向后到达机械零点
Ejector 顶 针
Ejector backward is mechanically zero point.
弹射器已经向后到达机械零点
Clamp 模 板
Locked clamp toggle locked is mechanically zero point.
模板肘节已于机械零点处锁闭
- AIN 1
负模拟端 1
+AIN 1
正模拟端 1
- AIN 2
负模拟端 2
+AIN 2
正模拟端 2
- AIN 3
负模拟端 3
+AIN 3
正模拟端 3
- AIN 4
负模拟端4
+AIN 4
正模拟端4
System Pressure transducer
系统压力转换器
- Sign
+Sign 0 to 10V or± 10V
- AIN 5 负模似端5
+AIN 5 正模拟端5
Clamp Pressure transducer
模板压力转换器
- Sign
+Sign 0 to10 or干 10V
- AIN 6 负模拟端6
+AIN 6 正模拟端6
Injection Pressure transducer
注射器压力转换器
- Sign
+Sign 0 to 10V or干 10V
- AIN 7 负模拟端7
+AIN 7 正模拟端7
Carriage Pressure transducer
座台压力转换器
-sign
+sign 0 to 10V or干 10V
- AIN 8 负模拟端8
+AIN 8 正模拟端8
CC4000 Analog Inputs
CC4000模拟输入端
Title CC4000+OP2228 connection plan
Size A4
Number
Revision
Date 15-Jul-2010
Sheet of 8/ 12
File F:\PROTEL\OP2228-UPE.SCH
Drawn By:

Speed Control Proportional Valve
速度控制比例阀
Pressure Control Proportional Valve
压力控制比例阀
Back Pressure Control Proportional Valve
回压控制比例阀
+E24V
0V
+24
Q(A02)
P(A01)
BP(A03)
Reserve(AO4)
0V
Offset
抵消
Gain
增加
Current limit
电流范围
Q(A02)
P(A01)
(A03)BP
(A04)Reserve
CC4000 PWM outputs
Title
CC4000+OP2228 connection plan
Size
A4
Number
Revision
Date:
15-Jul-2010
Sheet of
9/12
File:
F:\PROTEUS\OP2228-IVP9.SCH
Drawn By:

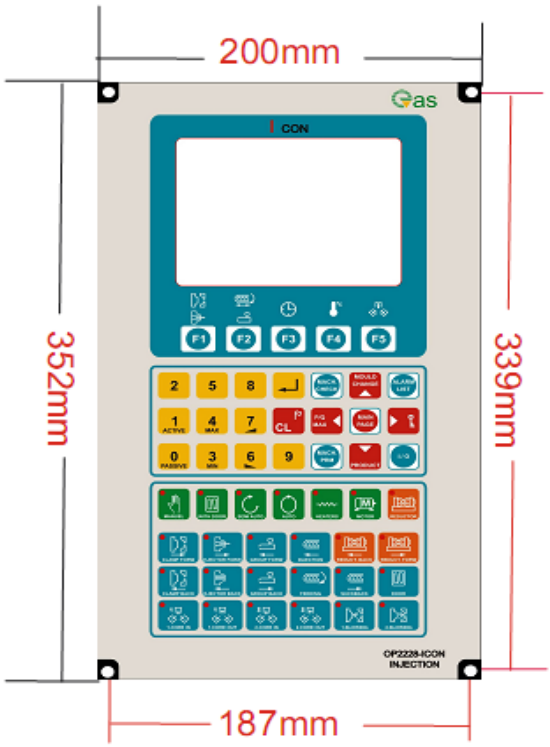

+E24V
24伏供电电源正
Clamp backward
模板向后
DO 1.0
Clamp forward
模板向前
DO 1.1
Carrige forward
座台向前
DO 1.2
Carriage backward
座台向后
DO 1.3
Ejector forward
顶针向前
DO 1.4
Ejector backward
顶针向后
DO 1.5
Feeding
进 料
DO 1.6
Injection
注 塑
DO 1.7
Suck back
松 退
DO 2.0
1.core forward
1号抽芯向前
DO 2.1
1.core backward
1号抽芯向后
DO 2.2
2.core forward
2号抽芯向前
DO 2.3
2.core backward
2号抽芯向后
DO 2.4
Alarm lamp
警报灯
DO 2.5
Max 2A
ALARM LAMP
警报灯
Mould high adjust forward
厚度器向前
DO 2.6
Mould high adjust backward
厚度器向后
DO 2.7
CC4000 digital outputs
Title
CC4000+OP2228 connection plan
Size
A4
Number
Revision
Date:
7-Jul-2010
Sheet of
10/12
File:
F:\PROTEL\OP2228~1\X1.SCH
Drawn By:


CC4000 Digital Outputs
CC4000控制器的数字量输出
1. Heater
1号加热器
2. Heater
2号加热器
3. Heater
3号加热器
4. Heater
4号加热器
Nozzle
喷嘴
Lubrication
清洁系统
Pump Motor Delta & Normal
泵电机启N级D触点组
Pump Motor Star
泵电机启动
DO 3.0
DO 3.1
DO 3.2
DO 3.3
DO 3.4
DO 3.5
DO 3.6
DO 3.7
+24V
Relay Card 1
继电器电控板
220V
Ntor
Contactors
交流接触器
C1
C2
C3
C4
C5
C6
Normal
DELTA
STAR
交流接触器S触点(常闭端)
交流接触器S触点组(常开端)
交流接触器D触点组
交流接触器N触点组
开关组
Nozzle
H1
H2
H3
H4
Lubrication Motor
清洁油电机
Hydraulic pump motor
液压泵电机
Page 12 D7
Page 12, B8
O 3.6
O 3.7
0.5s
4s
DELTA & NORMAL
STAR
L
N
R
S
T
Title
CC4000+DP22286 connection plan
Size
A3
Number
Date:
File:
Sheet of
Drawn By:
11/12


5. Heater
5号加热器
6. Heater
6号加热器
7. Heater
7号加热器
Heater Active
7号加热器激活
Conveyor
传送带
Air Ejector 1
1号气顶
Air Ejector 2
2号气顶
Regeneration
特快合模
CC4000 Digital outputs
CC4000 数字输出端
DO 4.0
DO 4.1
DO 4.2
DO 4.3
DO 4.4
DO 4.5
DO 4.6
DO 4.7
+E24V
+24V
I1
I2
I3
I4
I5
I6
I7
I8
Relay Card 2
220V
Ntor
O 1
O 2
O 3
O 4
O 5
O 6
O 7
O 8
L
N
N
N
C7
C8
C9
C10
C11
Page 11,C7
H1
H2
H3
H4
H5
H6
H7
Nozzle
射咀
page 11,A8
C11
Conveyor Motor
传送装置马达
CC4000+OP2228 connection plan
Number
Revision
Size
A3
Date:
13-Jul-2010
Sheet of
1/2
File:
Drawn By:

20.IMPORTANT DIMENSION FOR MECHANICAL INSTALLATION

20.1.Installation of OP2228



Front view and installation screw position.
正面视图及螺丝安装位置.

Windows size to place operator interface.
操作界面的安装尺寸.

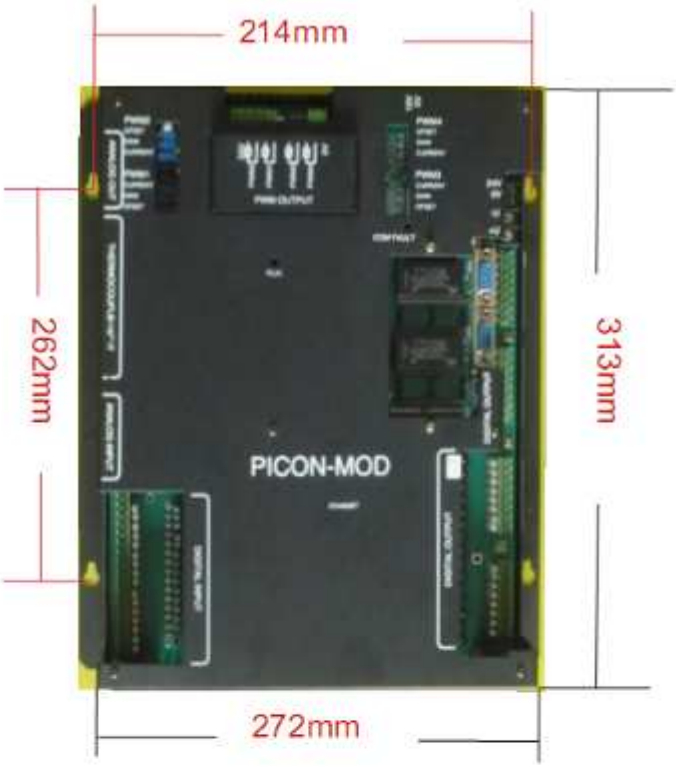
Neccesity deepness behind of operator interface.
操作界面安装的最小背面深度

20.2.Installation of CC3500

Up view and installation screw position.
正面视图及螺丝安装位置.

Neccesity space of cable installation.
控制器安装的必要背面深度

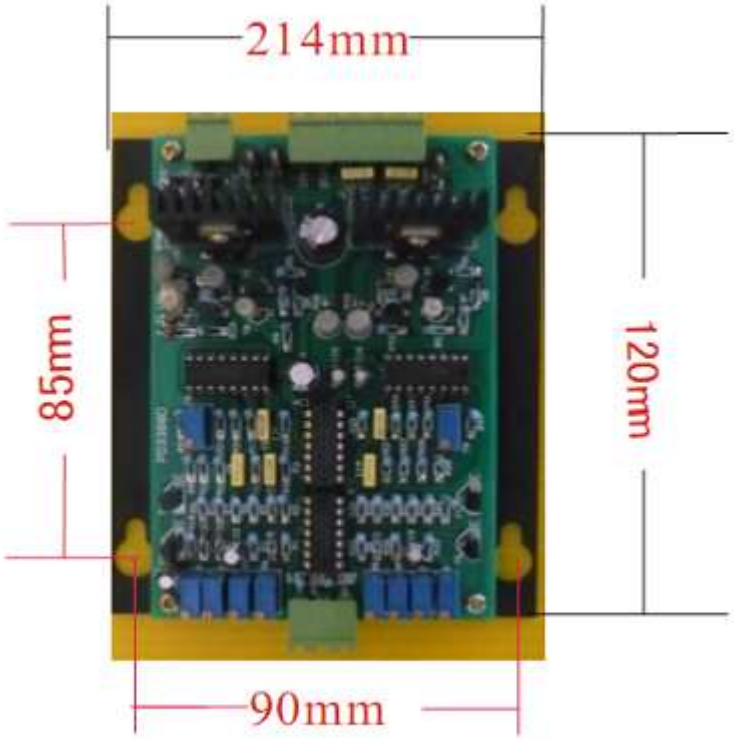
20.3.Installation of CC4000



Up view and installation screw position.
正面视图及螺丝安装位置.

Neccesity space of cable installation.
控制器安装的必要背面深度

20.4.Installation of PD3000



Up view and installation screw position.
正面视图及螺丝安装位置.

Side view
侧视图及最小安装高度.

20.5.Installation of Relay card